

حمل الآن

مجاناً وحصرياً

المراجعة رقم (1)

الترم الاول



First Algebra

Q1: Choose the correct answer

1 If $(a + 5, 3) = (8, b - 1)$ then $\sqrt{a^2 + b^2}$

a 7

b 3

c 9

d 5

2 If $n(X^2) = 9$ and $n(X \times Y) = 6$, then $n(Y^2) = \dots\dots\dots$

a 2

b 3

c 4

d 8

3 If $n(X^2) = 9$, then $n(X) = \dots\dots\dots$

a 3

b ± 3

c 9

d ± 9

4 If $n(X) = 2$ and $Y = \{1, 2\}$, then $n(X \times Y) = \dots\dots\dots$

a 4

b 3

c 5

d 6

5 If $(3, 5) \in \{(3, x), (3, 8), (6, 8)\}$, then $X = \dots\dots\dots$

a 8

b 3

c 5

d 6

6 If $X = \{1, 2\}$ and $Y = \{3, 4\}$, then $(3, 4) \in \dots\dots\dots$

a $X \times Y$ b $Y \times X$ c X^2 d Y^2

7 If $X = \{2\}$ and $Y = \{3\}$, then $X \times Y = \dots\dots\dots$

a 6

b $\{6\}$ c $(2, 3)$ d $\{(2, 3)\}$

8 If $X = \{3, 4\}$, then $n(X \times \emptyset) = \dots\dots\dots$

a 0

b 1

c 2

d $\emptyset$ 

9 If the point $(a, 5) \in Y\text{-axis}$, then $a = \dots\dots\dots$

- (a) 0 (b) 5 (c) -5 (d) 25

10 If $\{2\} \times \{x, y\} = \{(2, 4), (2, 3)\}$, then $x - y = \dots\dots\dots$

- (a) 1 (b) -1 (c) ± 1 (d) 0

11 If $b < 3$, then the point $(5, b - 3)$ lies in the quadrant.

- (a) First (b) Second (c) third (d) Fourth

12 If (a, b) lies in the third quadrant, then $a b \dots\dots\dots$ zero

- (a) = (b) > (c) < (d) $\leq$

13 If $(x-2, x-4)$ lies in 4th quadrant, then $x = \dots\dots\dots$

- (a) 0 (b) 2 (c) 3 (d) 4

14 If X, Y are two sets where $n(X \times Y) = 11$, then $n(X) + n(Y) = \dots\dots\dots$

- (a) 8 (b) 9 (c) 11 (d) 12

15 The distance between the point $(-5, 12)$ and the $X\text{-axis} = \dots\dots$ length unit.

- (a) 5 (b) 12 (c) 13 (d) -5

16 If $(k^2 - 4, k)$ lies on the negative direction of $Y\text{-axis}$, then $k = \dots\dots\dots$

- (a) 2 (b) ± 2 (c) -2 (d) 0

17 If $f(x+3) = x-3$, then $f(7) = \dots\dots\dots$

- (a) 4 (b) 1 (c) 7 (d) 10

18 If the curve of the function $f : f(x) = x^2 - 2$ passes through the point $(2, c)$, then the value of $c = \dots\dots\dots$

- (a) 0 (b) 1 (c) 2 (d) 4



19 Which of the following functions is polynomial ?

- (a) $f(x) = x^3 + x^2 + 2$ (b) $f(x) = x^2 + \sqrt{x} + 8$ (c) $f(x) = x^3 + \frac{1}{x} + 7$ (d) $f(x) = x(x^2 + \frac{1}{x} - 2)$

20 The set of images of each elements of the domain of the function is called

- (a) domain (b) codomain (c) range (d) rule

21 The function $f(x) = x^5 - 3x^4 + 1$ is of degree

- (a) fourth (b) ninth (c) fifth (d) second

22 If $f(x) = 4$, then $f(4) \div f(10) = \dots\dots\dots$

- (a) 4 (b) $\frac{2}{5}$ (c) 1 (d) 10

23 If $R = \{(1,3), (2,5), (4,3)\}$ represent a function, then its domain =

- (a) $\{1,2,4\}$ (b) $\{3,5,4\}$ (c) $\mathbb{Z}$ (d) $\mathbb{N}$

24 If $f(x) = kx + 8$ and $f(2) = 0$, then $k = \dots\dots\dots$

- (a) 8 (b) 6 (c) 4 (d) -4

25 If $f(x) = nx^2 + 3x^n - 3$, the set of all possible values of n that makes the function is of 2nd degree is

- (a) $\{2,3\}$ (b) $\{1,-1\}$ (c) $\{0,1,2\}$ (d) $\{2,1\}$

26 If $f(x) = 5$, then $f(-3) = \dots\dots\dots$

- (a) 5 (b) -5 (c) -3 (d) -15

27 The vertex of the curve that represents the function $f(x) = 2x^2 - 4x + 5$ is

- (a) (1, 3) (b) (3, 1) (c) (-1, 3) (d) (3, -1)

28 If the curve that represents the function $f(x) = x^2 + c$ passes through the point (0, 2), then $c = \dots\dots\dots$

- (a) 3 (b) 2 (c) -3 (d) 1



29 If $(a, a) \in f$ where $f(x) = 2x + 3$, then $a = \dots\dots\dots$

- (a) 3 (b) -3 (c) 0 (d) 1

30 If $f(x) = x^2$ and $x \in [-2, 2]$, then $f(x) \in \dots\dots\dots$

- (a) $[0, 4]$ (b) $]0, 4[$ (c) $[0, 1]$ (d) $[-4, 4]$

31 If $(x, 7)$ is located on Y-axis, then $5x + 1 = \dots\dots\dots$

- (a) 0 (b) 1 (c) 5 (d) 6

32 The ordered pair (x, y) where $x > 0$ and $y < 0$ is located in the $\dots\dots\dots$ quadrant.

- (a) 1st (b) 2nd (c) 3rd (d) 4th

33 If $(a, 3)$ lies on the straight line that represents $f(x) = 2x - 5$, then $a = \dots\dots\dots$

- (a) 2 (b) 1 (c) -2 (d) 4

34 If $f(x) = 3x + b$ and $f(4) = 13$, then $b = \dots\dots\dots$

- (a) 1 (b) 2 (c) 0 (d) 3

35 If the straight line that represents the function $f(x) = 2x - a$ passes through the origin, then $a = \dots\dots\dots$

- (a) -3 (b) 2 (c) 0 (d) 3

36 $f(x) = 3x$ is represented by a straight line passes through the point $\dots\dots\dots$

- (a) $(3, 3)$ (b) $(3, 0)$ (c) $(0, 0)$ (d) $(0, 3)$

37 If $(k, k) \in$ the function $f : f(x) = 2x + 1$, then $k = \dots\dots\dots$

- (a) 1 (b) 3 (c) -1 (d) -4

38 If the curve of the function $f : f(x) = x^2 - k$ passes through the point $(3, 0)$, then $k = \dots\dots\dots$

- (a) 9 (b) 6 (c) 3 (d) 12



39 If $f(x + 5) = x - 3$, then $f(9) = \dots\dots\dots$

(a) 2

(b) 9

(c) 6

(d) 1

40 If $f(x) = x^2 - \sqrt{2}x$, then $f(\sqrt{2}) = \dots\dots\dots$

(a) 4

(b) 2

(c) 6

(d) 0

41 The function $f(x) = x(x - x^2)$ is a polynomial of $\dots\dots\dots$ degree

(a) 1st

(b) 2nd

(c) 3rd

(d) 4th

42 If $f(x) = 3$, then $f(-5) - f(5) = \dots\dots\dots$

(a) 6

(b) 1

(c) zero

(d) -1

43 If $n(x) = 2$, $n(Y^2) = 9$, then $n(X \times Y) = \dots\dots\dots$

(a) 6

(b) 18

(c) 11

(d) 7

44 If $n(X \times Y) = 6$ and $Y = \{2\}$, then $n(X^2) = \dots\dots\dots$

(a) 4

(b) 9

(c) 16

(d) 36

45 If the point (X, y) lies on the second quadrant, then the point $(-X, y^2)$ lies on the $\dots\dots\dots$ quadrant.

(a) 1st

(b) 2nd

(c) 3rd

(d) 4th

46 If $(2, x - 1) = (y, 3)$ then $x + y = \dots\dots\dots$

(a) -3

(b) 2

(c) 3

(d) 6

47 If f is a function from set X to set Y , then X is called $\dots\dots\dots$

(a) The range of function f

(b) The domain of function f

(c) The rule of function f

(d) The codomain of function f



48 If the curve of the function $f : f(x) = x^2 + 1$ passes through the point $(3, m)$, then the value of $m = \dots$

- (a) Zero (b) 6 (c) 10 (d) 9

49 If R is a function from the set X to the set Y where $R = \{ (4, 1), (7, 1), (5, 2) \}$, then its range =

- (a) $\{4, 7, 5\}$ (b) $\{1\}$ (c) $\{1, 2\}$ (d) $\{1, 2, 4, 5\}$

50 If the point $(3, b - 5)$ lies on the x -axis, then $2b + 1 = \dots$

- (a) Zero (b) 5 (c) 11 (d) 8

Q2: Answer The Following

1 Find the positive number if its square added to both terms of the ratio $5 : 11$ it becomes $3 : 5$.

2 If $x = \{1, 3, 4, 5\}$, $y = \{1, 2, 3, 4, 5, 6\}$ and R is a relation from X to Y where " aRb " means " $a + b = 7$ " for each $a \in X, b \in Y$

- (a) Write R and represent it with an arrow diagram.
(b) Show if R is a function or not, and why? If it is a function, find its range.

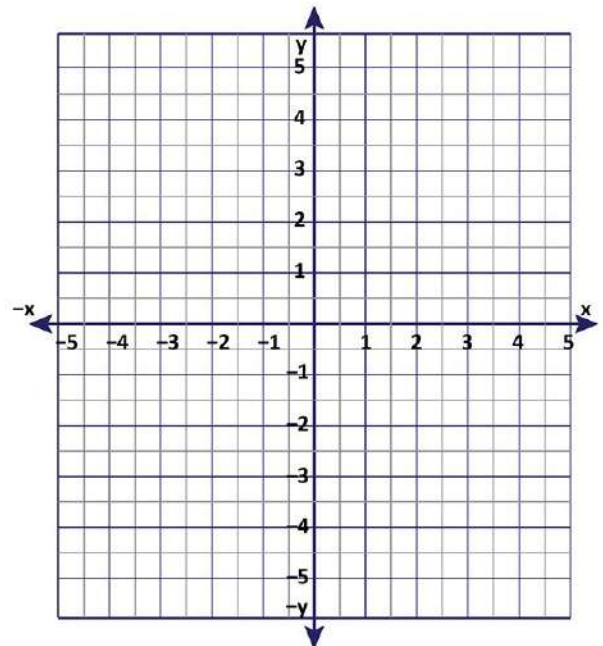
3 If $(x + 3, 8) = (5, 2y)$, then find the value of x and y .



4 If $f(x) = 2x^2 - 5x + 2$, prove that $f(2) = f\left(\frac{1}{2}\right)$

5 Represent graphically the function $f: f(x) = 2 - x^2$, consider $x \in [-3, 3]$ and from the drawing deduce :

- a The vertex of the curve
- b The maximum value of the function.
- c The equation of the axis of symmetry



6 If $X = \{1, 3, 5\}$ and R is a function on X where $R = \{(a, 3), (b, 1), (1, 5)\}$.

Find the value of $a + b$.

7 If the straight line for the function $f: \mathbb{R} \rightarrow \mathbb{R}$ where $f(x) = 6x - a$ cuts Y-axis at the point $(b, 3)$. Find the value of $2a + 7b$.



- 8 If $f : f(x) = kx^2 + (3k + 2)x + 6$ and the x-coordinate of the vertex of the curve is - 2
Find: **a** The value of k **b** The minimum or maximum value of function f

- 9 If $f(x) = x^2 - 3x$, $r(x) = x - 3$
a Find the value of: $f(2) + 3r(2)$.
b Prove that: $f(3) = r(3)$.

- 10 If $X = \{1, 2\}$, $Y = \{2, 3, 4\}$, find:
a $(X \cap Y) \times X$
b $(X - Y) \times Y$
c $n(X^2)$

- 11 If the vertex of the curve of the function $f(x) = x^2 - ax + 3$ is $(2, k)$.
Find the value of a and k.

- 12 If the straight line which represents the function $f(x) = ax + b$ intersects X-axis at $(3, 0)$ and Y-axis at $(0, -3)$, find the value of a and b

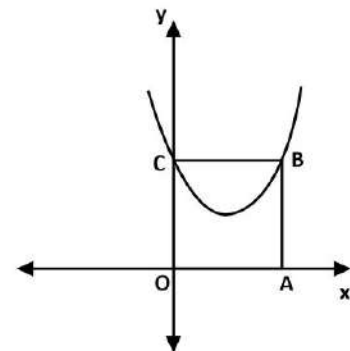


13 If $x = \{2, 3, 4\}$, $Y = \{2, 4, 6, 9, 16\}$ and R is a relation from X to Y where " aRb " means " $a^2 = b$ " for all $a \in X$, $b \in Y$

- Write R
- Is R a function ? Find its range.

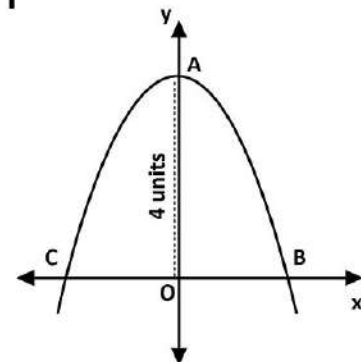
14 If $(x^2, |y|) = (4, 3)$ and (x, y) located in the 3rd quadrant, then find $x + y$.

15 The opposite figure:
represents the curve of the function
 $f(x) = x^2 - (k - 2)x - k + 4$
and $ABCO$ is a square.
Find the value of k



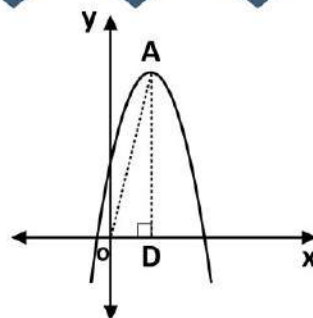
16 The opposite figure represents the curve of the function f
where $f(x) = m - x^2$, if $OA = 4$ units, Find:

- The value of m
- The coordinates of B and C
- The area of ΔABC





- 17 The opposite figure represents the curve of the function $f : f(X) = -x^2 + 6x + k$, if the area of $\Delta OAB = 24$ square units where A is the point of the vertex of the curve, then find the value of k



- 18 If $X \times Y = \{(2, 3), (2, 6), (2, 7)\}$, Find:

a X and Y.

b Y^2

c $n(X^2)$

- 19 If $X = \{2, 1, 0, -1, -2\}$, and R is a relation on X, where aRb means (a is the additive inverse of b) for every $a, b \in X$.

Write the relation R and represent it with a Cartesian diagram.

- 20 If $X = \{1, 3, 5\}$ and R is a function on X, and relation R is $\{(a, 3), (b, 1), (1, 5)\}$. Find:

a The range of the function

b The numerical value of the expression: $a + b$

- 21 If $X = \{2, 3, 4\}$, $Y = \{8, 6, 10, 11, 15\}$, and R is a relation from X to Y where aRb means (a is a factor of b) for every $a \in X$ and $b \in Y$.

First: Write the relation R and represent it with an arrow diagram.

Second: Is R a function or not? State the reason.



Q1: Choose the correct answer

1 If y is the middle proportional between x and z , then $\frac{x}{z} = \dots\dots$

(a) $\frac{x^2}{y^2}$

(b) $\frac{y^2}{z^2}$

(c) $\frac{z^2}{y^2}$

(d) $\frac{y^2}{x^2}$

2 If $a, b, 2, 3$ are proportional, then $\frac{b}{a} = \dots\dots\dots$

(a) $\frac{3}{2}$

(b) $\frac{2}{3}$

(c) 3

(d) 2

3 If $4x^2 = 9y^2$, then $\frac{x}{y} = \dots\dots\dots$

(a) $\frac{9}{4}$

(b) $\frac{3}{2}$

(c) $\pm \frac{3}{2}$

(d) $\pm \frac{2}{3}$

4 If $5a - 4b = 0$, then $\frac{a}{b} = \dots\dots\dots$

(a) $\frac{4}{5}$

(b) $\frac{5}{4}$

(c) $\frac{-4}{5}$

(d) $\frac{-5}{4}$

5 If $\frac{4}{x} = \frac{7}{y} = \frac{b}{y-x}$, then $b = \dots\dots\dots$

(a) 3

(b) -3

(c) 11

(d) -11

6 If $\frac{a}{b} = \frac{c}{d} = m$ where $m \neq 0$, then $\frac{a \times c}{b \times d} = \dots\dots\dots$

(a) $2m^2$

(b) m^2

(c) m

(d) $2m$

7 If $\frac{x}{5} = \frac{y}{4} = \frac{x+2y}{k}$, then $k = \dots\dots\dots$

(a) 9

(b) 13

(c) 14

(d) 8

8 The positive middle proportional between a and b is

(a) $\sqrt{ab}$

(b) $-\sqrt{ab}$

(c) $\pm \sqrt{ab}$

(d) ab

9 The third proportional of 9 and -12 is

(a) -16

(b) 8

(c) 16

(d) 108



10 If 6 is the middle proportional between m and 2, then m =

(a) 8

(b) 12

(c) 18

(d) 36

11 If $\frac{a}{b} = \frac{b}{c} = \frac{c}{5} = 2$, then a =

(a) 5×2^2

(b) 40

(c) 10

(d) 2×5^3

12 If a, 2, 4, b are in a continued proportional, then a + b =

(a) 1

(b) 8

(c) 7

(d) 9

13 If $y^2 + 4x^2 = 4xy$, then

(a) $y \propto x$

(b) $y \propto x^2$

(c) $y \propto \frac{1}{x}$

(d) $y \propto \frac{1}{x^2}$

14 If $Y - X = \frac{2}{y} - \frac{2}{x}$, $X \neq 0$, $Y \neq 0$, then $y \propto$

(a) $y \propto x + 1$

(b) $y \propto x$

(c) $y \propto \frac{1}{x}$

(d) $y \propto \frac{1}{x^2}$

15 If $y = \frac{2}{x^2}$ where m is a constant $x \neq 0$, then $y \propto$

(a) x^2

(b) x

(c) $\frac{1}{x^2}$

(d) $\frac{1}{x}$

16 If $x - 2y = 0$, then $x \propto$

(a) y^2

(b) y

(c) $\frac{1}{y^2}$

(d) $\frac{1}{y}$

17 The relation that represents a direct variation between x and y is

(a) $xy = 5$

(b) $y = x + 2$

(c) $\frac{x}{3} = \frac{4}{y}$

(d) $\frac{x}{5} = \frac{y}{2}$

18 If $xy^5 = \text{constant}$, then x varies inversely as

(a) $\frac{1}{5}$

(b) y^5

(c) y

(d) y^2

19 The number that must be added to the numbers 1,3,6 to be in a continued proportional is

(a) 1

(b) 2

(c) 3

(d) 4



20 If $y \propto x$ and $y = 2$ as $x = 4$, then $y = \dots x$

(a) $\frac{1}{2}$

(b) 4

(c) 3

(d) 2

21 If $x^2y^2 + \frac{1}{4} = xy$, then

(a) $x \propto y$

(b) $y \propto x$

(c) $y \propto \frac{1}{x}$

(d) $2x \propto 5y$

22 The middle proportional between 5 and 20 is

(a) 10

(b) -10

(c) 100

(d) ± 10

23 The middle proportional between $(x - 2)$ and $(x + 2)$ is

(a) $\sqrt{x + 2}$

(b) $\sqrt{x^2 - 4}$

(c) $x^2 - 4$

(d) $\pm \sqrt{x^2 - 4}$

24 If $\frac{a}{b} = \frac{2}{3}$ and $\frac{a}{c} = \frac{4}{5}$, then $b : c = \dots$

(a) 3 : 4

(b) 5 : 6

(c) 6 : 5

(d) 4 : 3

25 If $\frac{a}{5} = \frac{b}{7}$, then $7a - 5b + 3 = \dots$

(a) 3

(b) 7

(c) 5

(d) 2

26 If $3a = \frac{5}{6}b$, then $\frac{a}{b} = \dots$

(a) $\frac{18}{5}$

(b) $\frac{15}{6}$

(c) $\frac{6}{15}$

(d) $\frac{5}{18}$

27 If $y \propto x$ and $x = 1$ when $y = 4$, then the variation constant =

(a) 4

(b) 3

(c) 2

(d) 1

28 If $\frac{a}{b} = \frac{c}{d} = \frac{3}{5}$, then $\frac{a+c}{b+d} = \dots$

(a) $\frac{5}{3}$

(b) $\frac{3}{5}$

(c) $\frac{6}{5}$

(d) $\frac{5}{6}$



29 If a, b, c and d are in continued proportion, and $a + b + c = 5$, $b + c + d = 7$, then $\frac{a}{b} = \dots\dots\dots$

(a) $\frac{5}{7}$

(b) $\frac{7}{5}$

(c) $\frac{-5}{7}$

(d) $\frac{-7}{5}$

30 If $\frac{x}{5} = \frac{y}{4} = \frac{x+2y}{k}$, then $k = \dots\dots\dots$

(a) 9

(b) 14

(c) 13

(d) 8

31 If $\frac{a}{b} = \frac{3}{5}$, find the value of $6b - 10a - 3 = \dots\dots\dots$

(a) 3

(b) 4

(c) -4

(d) -3

32 If $\frac{a}{5} = \frac{b}{2} = \frac{h}{3} = \frac{2a+3b-2h}{k}$, then $k = \dots\dots\dots$

(a) -10

(b) 2

(c) 10

(d) 22

33 If $a, 3, 9, b$ are continued proportional quantities, find the value of: $b + a = \dots\dots\dots$

(a) 3

(b) 9

(c) 27

(d) 28

34 If $x - 1, 2, 4$ and $x + 1$ are proportional quantities, then $x = \dots\dots\dots$, $x \in \mathbb{N}$

(a) -3

(b) 3

(c) ± 3

(d) 9

35 If a, x, b and $2x$ are proportional quantities, then $a : b = \dots\dots\dots$

(a) 1 : 2

(b) 2 : 1

(c) 1 : 3

(d) 1 : 4

36 If $x^4y^2 - 14x^2y + 49 = 0$, then y varies as $\dots\dots\dots$

(a) x

(b) x^2

(c) $\frac{1}{x^2}$

(d) $\frac{5}{x^2}$

37 The number that, when added to the numbers 1, 3, and 6, makes them a continued proportion is $\dots\dots\dots$

(a) 2

(b) 3

(c) 1

(d) 4



38 If $y^2 + 4x^2 = 4xy$, then

- (a) $y \propto x$ (b) $y \propto x^2$ (c) $y \propto \frac{1}{x}$ (d) $y \propto \frac{1}{x^2}$

39 If $y \propto x$ and $y = 5$ when $x = 3$, then the constant proportional x equals

- (a) 15 (b) 5 (c) 3 (d) $\frac{5}{3}$

40 If $X, 8, X^2$ are in continued proportion, then $X = \dots\dots\dots$

- (a) $8X^3$ (b) 8 (c) X^3 (d) 4

41 If $x, 4, y, 5$ are proportional quantities, then $x : y = \dots\dots\dots$

- (a) 4 : 5 (b) 5 : 4 (c) 4 : 1 (d) 5 : 1

42 If the wage received by worker (A) is directly proportional to the number of hours he works (x), what is the equation that represents this relationship?

- (a) $A = m + x$ (b) $A = m x$ (c) $A = x \div m$ (d) $A = m \div x$

43 The ratio between the area of a square shaped region of side length (L) cm : the area of a square shaped region of side length ($3L$) cm is

- (a) 1 : 3 (b) 3 : 1 (c) 1 : 9 (d) 9 : 1

44 If $x^2 y^2 - 12 xy + 36 = 0$, then $y \propto \dots\dots\dots$

- (a) x (b) x^2 (c) $\frac{1}{x}$ (d) $\frac{1}{x^2}$

45 If a, x, b and $2x$ are proportional quantities, then $b : a = \dots\dots\dots$

- (a) 1 : 2 (b) 2 : 1 (c) 1 : 3 (d) 1 : 4

46 If $x - 1, 2, 4$ and $x + 1$ are proportional quantities, then $x = \dots\dots\dots$, x belongs to N

- (a) -3 (b) 3 (c) ± 3 (d) 9



Q2: Answer The Following

1 If $a, 3, 9, b$ are in a continued proportion, find the value of a and b .

2 If a, b, c and d are proportional quantities, prove that: $\frac{a + 2c}{b + 2d} = \frac{c - a}{d - b}$

3 Two integer numbers, the ratio between them is $3 : 7$ and if we subtracted 5 from each them , the ratio between them becomes $1 : 3$, find the two numbers.

4 If a, b, c, d are in a continued proportional quantities, Then prove that: $\frac{ab - cd}{b^2 + c^2} = \frac{a - c}{b}$

5 If $\frac{a + b}{b} = \frac{c + d}{d}$, prove that a, b, c and d are proportional.



6 If y varies directly with x , and $y = 14$ when $x = 2$, find:

First: the relationship between y and x .

Second: the value of y when $x = 3$.

7 If y inversely changes with x and $y = 6$ when $x = 5$, find the relationship between y and x then find the value of x when $y = 2$.

8 If a, b, c, d are proportional quantities, then prove that: $\frac{a}{b-a} = \frac{c}{d-c}$

9 If $\frac{a}{2} = \frac{b}{3} = \frac{c}{4} = \frac{2a-2b+5c}{3k}$, Find the value of k

10 If a, b, c , and d are proportional quantities, Prove that: $\frac{a+2c}{b+2d} = \frac{3a+c}{3b+d}$

11 If $a, 6, b$ and 54 are four positive quantities in continued proportional, Find the value of a and b .



12) If $\frac{a}{b+c} = \frac{1}{3}$, $\frac{c}{a+b} = \frac{5}{7}$, Find the value of: $\frac{b}{a+c}$

13) If 4, a, $\frac{1}{9b^2}$ are in continued proportion. Find the value of ab

14) A worker earns a wage that varies directly with the number of hours worked. If he works 8 hours and earns 120 pounds, how much will he earn if he works 10 hours?

15) If $y \propto x$ and $y = 3$ at $x = 9$ Find:

1] The relation between y, x

2] The value of y at $x = 12$

16) If y varies inversely with $\sqrt{x}$, and $y = 2$ when $x = 9$, find the value of x when $y = 3$

17) If $\frac{x-2y}{x+3y} = \frac{1}{3}$, Find the value of $\frac{y}{x}$



18 If $\frac{x}{3} = \frac{y}{4} = \frac{z}{5}$, Prove that $\frac{2y - z}{3x - 2y + z} = \frac{1}{2}$

19 If b is the middle proportional between a and c, Prove that: $\frac{a^2 + b^2}{b^2 + c^2} = \frac{a}{c}$

20 If $\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = \frac{2}{3}$, and $5a - 3c + e = 18$ Find the value of $5b - 3d + f$

21 Find the number that if added to the two terms of the ratio 7 : 11 it becomes 2 : 3

22 If $\frac{x+y}{25} = \frac{x-y}{11} = \frac{x+y-z}{8}$, Prove that: $x : y : z = 18 : 7 : 17$

23 If Y varies directly as X and Y = 20 as X = 7, Find the relation between X and Y, then find the value of X as Y = 4.



24 If $(x - y) \propto \left(\frac{1}{y} - \frac{1}{x}\right)$. Prove that: $y \propto \frac{1}{x}$

25 If a, b, c and d are proportional quantities, prove that: $\frac{ac}{bd} = \left(\frac{a - c}{b - d}\right)^2$

26 If $x^2y^2 - 6xy + 9 = 0$, Prove that $y \propto \frac{1}{x}$

27 Find the number that if added to the numbers 3, 5, 9, and 13 it becomes proportional.

28 If $\frac{x}{3} = \frac{y}{4} = \frac{z}{5}$, find the value of: $\frac{x - y + z}{2x + y}$.

29 If $\frac{a + b}{a - b} = \frac{c + d}{c - d}$, Prove that a, b, c and d are in proportion



- 30** A car is moving at a constant velocity such that the distance traveled (d) is directly proportional to the time (t). If the car travels 150 kilometers in 6 hours, How many kilometers does the car travel in 10 hours?

- 31** If $\frac{x+y}{9} = \frac{y+z}{7}$, Prove that: $\frac{x-z}{x+2y+z} = \frac{1}{8}$

- 32** If $\frac{a+2h}{6} = \frac{b+3c}{3}$, Prove that: $a \propto c$

- 33** If $a : (b + c) = 1 : 3$, $c : (a + b) = 5 : 7$ then, Find the value of $b : (a + c)$

- 34** If y middle proportional between x and z: $x = 4$ and $z = 4$ find the value of $x^2 + y^2 + z^2$

- 35** If $\frac{y}{x-z} = \frac{x}{y} = \frac{x+z}{y}$, prove that all of these ratios equal 2 (unless $x + y = 0$).



Q1: Choose the correct answer

1 The difference between the greatest value and the smallest value is called

- (a) median (b) mean (c) range (d) mode

2 If the function $f(x) = (k - 3)x^3 + 2x^m + 1$ is of 2nd degree, then $k+m =$

- (a) 5 (b) 3 (c) 2 (d) -5

3 If all individuals are equal, then

- (a) $x = 0$ (b) $\bar{x} = 0$ (c) $\sigma = 0$ (d) mode = 0

4 The positive square root of the average of squares of deviations of the values from their mean is called

- (a) median (b) mean (c) range (d) standard deviation

5 The mean of the values 7, 3, 6, 9, 5 is

- (a) 3 (b) 6 (c) 4 (d) 12

6 The simplest and easiest method of measuring dispersion is

- (a) median (b) mean (c) range (d) standard deviation

7 Selecting a sample of layers of a statistical society is called

- (a) random (b) class (layer) (c) deliberate (d) bunch

8 is a secondary resource of collecting data.

- (a) Personal interview (b) Questionnaires
(c) Data base of the employees (d) Observing and measuring



9 If the arithmetic mean of the values : $a, 5, 8, 7, 6$ is 6, then $a = \dots\dots\dots$

- (a) 4 (b) 6 (c) 8 (d) 30

10 If 67 is the greatest value and the range is 27, then the smallest value is

- (a) 67 (b) 40 (c) 27 (d) 94

11 If the range of the values : $6 + k, 6 - k, 6 + 5k$ and $6 - 2k$ is 14 where $k \in \mathbb{N}$, then $k = \dots\dots\dots$

- (a) 1 (b) 2 (c) 3 (d) 4

12 The commonest measure of dispersion and the most accurate is the

- (a) median (b) mean (c) range (d) standard deviation

13 If $\sum(x - \bar{x})^2 = 48$ of a set of values and the number of these values is 12, then $\sigma = \dots\dots\dots$

- (a) -4 (b) 4 (c) -2 (d) 2

14 If the arithmetic mean of the values : $a, 5, 8, 7, 6$ is 6, then $a = \dots\dots\dots$

- (a) 4 (b) 6 (c) 8 (d) 30

15 If the dispersion of the values : $X + 1, y + 4$ is zero, then $X - y = \dots\dots\dots$

- (a) -1 (b) -4 (c) 3 (d) 4

16 If the range of the values : $7, k, 8, 9, 5$ is 6, then $k = \dots\dots\dots$

- (a) 4 (b) 3 (c) 6 (d) 12

17 If the standard deviation for the values : $X + 1, y, 4$ equals zero, then $Xy = \dots\dots\dots$

- (a) 4 (b) 12 (c) 16 (d) 20



18 The appropriate method for testing the salinity levels of water from one of the wells is

- (a) Mass population (b) samples
(c) survey (d) interview

19 The range to the values 3, 3, 3, 3, 3 is

- (a) 3 (b) 1 (c) 0 (d) 12

20 If the smallest item of a set of values is 15 and the range of this set is 50, Find the value of the greatest item =

- (a) 65 (b) 35 (c) 16 (d) 750

Q2: Answer The Following

1 Calculate the mean and the standard deviation of the following values:

- (a) 15, 6, 8, 12, 4. (b) 5, 6, 7, 8, 9.

2 The following frequency distribution shows the ages of 10 children:

Age in year	5	8	9	10	12	Total
Number of children	1	2	3	3	1	10

Calculate the standard deviation of the ages in years.



3 Find the standard deviation of the values : 16, 32 ,56 , 20, 27

4 Calculate the mean and the standard deviation for the following frequency distribution :

sets	0-	4-	8-	12-	16-20	Total
frequency	3	4	7	2	9	25

Calculate the mean and the standard deviation of the number of children

5 Calculate the arithmetic mean and standard deviation for the following values 13, 14, 17, 19, 22 approximate the result to the nearest two decimal digits.

6 If the range of the values 2, 7, b, 6 is 8, where $b > 0$, Find the value of b.

اللهم اجعل هذا العمل خالصا لوجهك الكريم
واكتب له القبول والنفع يا كريم يا وهّاب.



ACCUMULATIVE

1 $2^{100} = 2^{99} + \dots$

(a) 2

(b) 1

(c) 2^{99}

(d) 99

2 If $x^3 = \frac{1}{8}$, then $x = \dots$

(a) $\frac{1}{2}$

(b) $\frac{1}{3}$

(c) 3

(d) -3

3 If $X = \{a, a^3\}$, then a may be equal to

(a) -1

(b) 0

(c) 1

(d) 3

4 Double of 2^8 is

(a) 2^{10}

(b) 2^{16}

(c) 4^4

(d) 2^9

5 $x^2 - y^2 = 16$, and $x + y = 8$, then $x - y = \dots$

(a) 2

(b) 1

(c) 24

(d) 32

6 If $6^x = 12$, then $6^{x+1} = \dots$

(a) 66

(b) 13

(c) 27

(d) 72

7 $(\sqrt{7} - 2)(\sqrt{7} + 2) = \dots$

(a) 11

(b) 3

(c) 28

(d) $\sqrt{7} + 4$

8 $x^3 y^{-3} = 8$, then $\frac{y}{x} = \dots$

(a) $\frac{1}{512}$

(b) $\frac{1}{8}$

(c) $\frac{1}{2}$

(d) 2

9 The S.S of $x^2 + 16 = 0$ is

(a) {4}

(b) {-4}

(c) {4, -4}

(d) $\emptyset$



10 If $3a = \sqrt{4}b$, then $\frac{a}{b} = \dots\dots\dots$

☐ a $\frac{2}{3}$

☐ b $\frac{3}{2}$

☐ c $\frac{3}{4}$

☐ d $\frac{4}{3}$

11 If $2^x = 8$, then $x^2 = \dots\dots\dots$

☐ a 2

☐ b 3

☐ c 4

☐ d 9

12 $R - Q = \dots\dots\dots$

☐ a Z

☐ b Q^c

☐ c $\emptyset$

☐ d R^+

13 If $\sqrt{x} = 3$, then $x = \dots\dots\dots$

☐ a 3

☐ b 6

☐ c 9

☐ d $\sqrt{3}$

14 If $2^{x-4} = \frac{1}{16}$, then $x = \dots\dots\dots$

☐ a $\frac{1}{4}$

☐ b $\frac{1}{3}$

☐ c $\frac{1}{2}$

☐ d 0

15 If $-1 < x < 3$, $x \in R$, then $(x + 1) \in \dots\dots\dots$

☐ a $\{0, 3\}$

☐ b $[-1, 3[$

☐ c $\{0, 4\}$

☐ d $]0, 4[$

16 Half of $2^{20} = \dots\dots\dots$

☐ a 2^5

☐ b 5^4

☐ c 2^{19}

☐ d 2^{10}

17 If $x - y = 5$, $x + y = \frac{1}{5}$, then $x^2 - y^2 = \dots\dots\dots$

☐ a $\frac{1}{25}$

☐ b 1

☐ c 25

☐ d 5

18 The sum of real numbers in the interval $] -3, 3]$ equals $\dots\dots\dots$

☐ a 3

☐ b zero

☐ c -3

☐ d can not sum



First Algebra

Q1: Choose the correct answer

1 If $(a + 5, 3) = (8, b - 1)$ then $\sqrt{a^2 + b^2}$

a 7

b 3

c 9

d 5

2 If $n(X^2) = 9$ and $n(X \times Y) = 6$, then $n(Y^2) = \dots\dots\dots$

a 2

b 3

c 4

d 8

3 If $n(X^2) = 9$, then $n(X) = \dots\dots\dots$

a 3

b ± 3

c 9

d ± 9

4 If $n(X) = 2$ and $Y = \{1, 2\}$, then $n(X \times Y) = \dots\dots\dots$

a 4

b 3

c 5

d 6

5 If $(3, 5) \in \{(3, x), (3, 8), (6, 8)\}$, then $X = \dots\dots\dots$

a 8

b 3

c 5

d 6

6 If $X = \{1, 2\}$ and $Y = \{3, 4\}$, then $(3, 4) \in \dots\dots\dots$

a $X \times Y$ b $Y \times X$ c X^2 d Y^2

7 If $X = \{2\}$ and $Y = \{3\}$, then $X \times Y = \dots\dots\dots$

a 6

b $\{6\}$ c $(2, 3)$ d $\{(2, 3)\}$

8 If $X = \{3, 4\}$, then $n(X \times \emptyset) = \dots\dots\dots$

a 0

b 1

c 2

d $\emptyset$ 

9 If the point $(a, 5) \in Y\text{-axis}$, then $a = \dots\dots\dots$

☒ a 0

☐ b 5

☐ c -5

☐ d 25

10 If $\{2\} \times \{x, y\} = \{(2, 4), (2, 3)\}$, then $x - y = \dots\dots\dots$

☐ a 1

☐ b -1

☒ c ± 1

☐ d 0

11 If $b < 3$, then the point $(5, b - 3)$ lies in the $\dots\dots\dots$ quadrant.

☐ a First

☐ b Second

☐ c third

☒ d Fourth

12 If (a, b) lies in the third quadrant, then $a b \dots\dots\dots$ zero

☐ a =

☒ b >

☐ c <

☐ d $\leq$

13 If $(x-2, x-4)$ lies in 4th quadrant, then $x = \dots\dots\dots$

☐ a 0

☐ b 2

☒ c 3

☐ d 4

14 If X, Y are two sets where $n(X \times Y) = 11$, then $n(X) + n(Y) = \dots\dots\dots$

☐ a 8

☐ b 9

☐ c 11

☒ d 12

15 The distance between the point $(-5, 12)$ and the $X\text{-axis} = \dots\dots$ length unit.

☐ a 5

☒ b 12

☐ c 13

☐ d -5

16 If $(k^2 - 4, k)$ lies on the negative direction of $Y\text{-axis}$, then $k = \dots\dots\dots$

☐ a 2

☐ b ± 2

☒ c -2

☐ d 0

17 If $f(x+3) = x-3$, then $f(7) = \dots\dots\dots$

☐ a 4

☒ b 1

☐ c 7

☐ d 10

18 If the curve of the function $f : f(x) = x^2 - 2$ passes through the point $(2, c)$, then the value of $c = \dots\dots\dots$

☐ a 0

☐ b 1

☒ c 2

☐ d 4



19 Which of the following functions is polynomial ?

- ☒ a $f(x) = x^3 + x^2 + 2$ ☐ b $f(x) = x^2 + \sqrt{x} + 8$ ☐ c $f(x) = x^3 + \frac{1}{x} + 7$ ☐ d $f(x) = x(x^2 + \frac{1}{x} - 2)$

20 The set of images of each elements of the domain of the function is called

- ☐ a domain ☐ b codomain ☒ c range ☐ d rule

21 The function $f(x) = x^5 - 3x^4 + 1$ is of degree

- ☐ a fourth ☐ b ninth ☒ c fifth ☐ d second

22 If $f(x) = 4$, then $f(4) \div f(10) = \dots\dots\dots$

- ☐ a 4 ☐ b $\frac{2}{5}$ ☒ c 1 ☐ d 10

23 If $R = \{(1,3), (2,5), (4,3)\}$ represent a function, then its domain =

- ☒ a $\{1,2,4\}$ ☐ b $\{3,5,4\}$ ☐ c $\mathbb{Z}$ ☐ d $\mathbb{N}$

24 If $f(x) = kx + 8$ and $f(2) = 0$, then $k = \dots\dots\dots$

- ☐ a 8 ☐ b 6 ☐ c 4 ☒ d -4

25 If $f(x) = nx^2 + 3x^n - 3$, the set of all possible values of n that makes the function is of 2nd degree is

- ☐ a $\{2,3\}$ ☐ b $\{1,-1\}$ ☐ c $\{0,1,2\}$ ☒ d $\{2,1\}$

26 If $f(x) = 5$, then $f(-3) = \dots\dots\dots$

- ☒ a 5 ☐ b -5 ☐ c -3 ☐ d -15

27 The vertex of the curve that represents the function $f(x) = 2x^2 - 4x + 5$ is

- ☒ a $(1, 3)$ ☐ b $(3, 1)$ ☐ c $(-1, 3)$ ☐ d $(3, -1)$

28 If the curve that represents the function $f(x) = x^2 + c$ passes through the point $(0, 2)$, then $c = \dots\dots\dots$

- ☐ a 3 ☒ b 2 ☐ c -3 ☐ d 1



29 If $(a, a) \in f$ where $f(x) = 2x + 3$, then $a = \dots\dots\dots$

(a) 3

(b) -3

(c) 0

(d) 1

30 If $f(x) = x^2$ and $x \in [-2, 2]$, then $f(x) \in \dots\dots\dots$

(a) $[0, 4]$

(b) $]0, 4[$

(c) $[0, 1]$

(d) $[-4, 4]$

31 If $(x, 7)$ is located on Y-axis, then $5x + 1 = \dots\dots\dots$

(a) 0

(b) 1

(c) 5

(d) 6

32 The ordered pair (x, y) where $x > 0$ and $y < 0$ is located in the $\dots\dots\dots$ quadrant.

(a) 1st

(b) 2nd

(c) 3rd

(d) 4th

33 If $(a, 3)$ lies on the straight line that represents $f(x) = 2x - 5$, then $a = \dots\dots\dots$

(a) 2

(b) 1

(c) -2

(d) 4

34 If $f(x) = 3x + b$ and $f(4) = 13$, then $b = \dots\dots\dots$

(a) 1

(b) 2

(c) 0

(d) 3

35 If the straight line that represents the function $f(x) = 2x - a$ passes through the origin, then $a = \dots\dots\dots$

(a) -3

(b) 2

(c) 0

(d) 3

36 $f(x) = 3x$ is represented by a straight line passes through the point $\dots\dots\dots$

(a) $(3, 3)$

(b) $(3, 0)$

(c) $(0, 0)$

(d) $(0, 3)$

37 If $(k, k) \in$ the function $f : f(x) = 2x + 1$, then $k = \dots\dots\dots$

(a) 1

(b) 3

(c) -1

(d) -4

38 If the curve of the function $f : f(x) = x^2 - k$ passes through the point $(3, 0)$, then $k = \dots\dots\dots$

(a) 9

(b) 6

(c) 3

(d) 12



39 If $f(x + 5) = x - 3$, then $f(9) = \dots\dots\dots$

(a) 2

(b) 9

(c) 6

(d) 1

40 If $f(x) = x^2 - \sqrt{2}x$, then $f(\sqrt{2}) = \dots\dots\dots$

(a) 4

(b) 2

(c) 6

(d) 0

41 The function $f(x) = x(x - x^2)$ is a polynomial of $\dots\dots\dots$ degree

(a) 1st

(b) 2nd

(c) 3rd

(d) 4th

42 If $f(x) = 3$, then $f(-5) - f(5) = \dots\dots\dots$

(a) 6

(b) 1

(c) zero

(d) -1

43 If $n(x) = 2$, $n(Y^2) = 9$, then $n(X \times Y) = \dots\dots\dots$

(a) 6

(b) 18

(c) 11

(d) 7

44 If $n(X \times Y) = 6$ and $Y = \{2\}$, then $n(X^2) = \dots\dots\dots$

(a) 4

(b) 9

(c) 16

(d) 36

45 If the point (X, y) lies on the second quadrant, then the point $(-X, y^2)$ lies on the $\dots\dots\dots$ quadrant.

(a) 1st

(b) 2nd

(c) 3rd

(d) 4th

46 If $(2, x - 1) = (y, 3)$ then $x + y = \dots\dots\dots$

(a) -3

(b) 2

(c) 3

(d) 6

47 If f is a function from set X to set Y , then X is called $\dots\dots\dots$

(a) The range of function f

(b) The domain of function f

(c) The rule of function f

(d) The codomain of function f



48 If the curve of the function $f : f(x) = x^2 + 1$ passes through the point $(3, m)$, then the value of $m = \dots$

(a) Zero

(b) 6

(c) 10

(d) 9

49 If R is a function from the set X to the set Y where $R = \{(4, 1), (7, 1), (5, 2)\}$, then its range =

(a) $\{4, 7, 5\}$

(b) $\{1\}$

(c) $\{1, 2\}$

(d) $\{1, 2, 4, 5\}$

50 If the point $(3, b - 5)$ lies on the x -axis, then $2b + 1 = \dots$

(a) Zero

(b) 5

(c) 11

(d) 8

Q2: Answer The Following

1 Find the positive number if its square added to both terms of the ratio $5 : 11$ it becomes $3 : 5$.

The number is 2

2 If $x = \{1, 3, 4, 5\}$, $y = \{1, 2, 3, 4, 5, 6\}$ and R is a relation from X to Y where " aRb " means " $a + b = 7$ " for each $a \in X, b \in Y$

(a) Write R and represent it with an arrow diagram.

(b) Show if R is a function or not, and why? If it is a function, find its range.

$\{(1, 6), (3, 4), (4, 3), (5, 2)\}$

Yes, it is a function. Range = $\{2, 3, 4, 6\}$

3 If $(x + 3, 8) = (5, 2y)$, then find the value of x and y .

$x = 2, y = 4$



4 If $f(x) = 2x^2 - 5x + 2$, prove that $f(2) = f\left(\frac{1}{2}\right)$

$$f(2) = 0 \text{ and } f\left(\frac{1}{2}\right) = 0.$$

$$f(2) = f\left(\frac{1}{2}\right) \text{ is proved.}$$

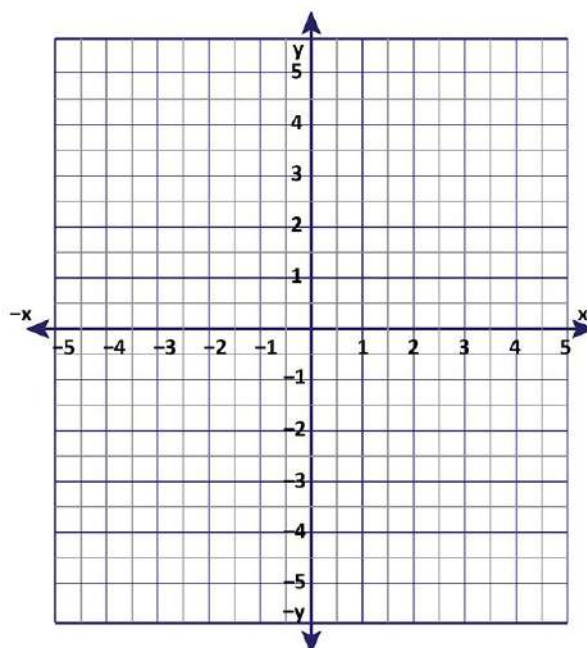
5 Represent graphically the function $f: f(x) = 2 - x^2$, consider $x \in [-3, 3]$ and from the drawing deduce :

- a The vertex of the curve
- b The maximum value of the function.
- c The equation of the axis of symmetry

$$(0, 2)$$

$$\text{Minimum} = 2$$

$$\text{Equation: } x = 0$$



6 If $X = \{1, 3, 5\}$ and R is a function on X where $R = \{(a, 3), (b, 1), (1, 5)\}$.

Find the value of $a + b$.

$$a + b = 8$$

7 If the straight line for the function $f: \mathbb{R} \rightarrow \mathbb{R}$ where $f(x) = 6x - a$ cuts Y-axis at the point $(b, 3)$. Find the value of $2a + 7b$.

$$a = -3$$

$$b = -6$$



- 8 If $f : f(x) = kx^2 + (3k + 2)x + 6$ and the x-coordinate of the vertex of the curve is - 2
Find: a The value of k b The minimum or maximum value of function f

$k = 2$

The minimum value is -2

- 9 If $f(x) = x^2 - 3x$, $r(x) = x - 3$
a Find the value of: $f(2) + 3r(2)$. -5
b Prove that: $f(3) = r(3)$.

$f(3) = 0$, $r(3) = 0$
they are equal

- 10 If $X = \{1, 2\}$, $Y = \{2, 3, 4\}$, find:
a $(X \cap Y) \times X$ $\{(2, 1), (2, 2)\}$
b $(X - Y) \times Y$ $\{(1, 2), (1, 3), (1, 4)\}$
c $n(X^2)$ 4

- 11 If the vertex of the curve of the function $f(x) = x^2 - ax + 3$ is (2, k).
Find the value of a and k.

$a = 4$, $k = -1$

- 12 If the straight line which represents the function $f(x) = ax + b$
intersects X-axis at (3, 0) and Y-axis at (0, -3), find the value of a and b

$a = 1$, $b = -3$



13 If $x = \{2, 3, 4\}$, $Y = \{2, 4, 6, 9, 16\}$ and R is a relation from X to Y where " aRb " means " $a^2 = b$ " for all $a \in X$, $b \in Y$

a Write $R = \{(2, 4), (3, 9), (4, 16)\}$

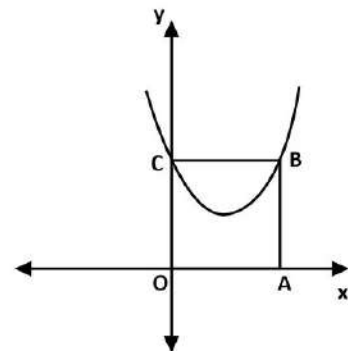
b Is R a function? Find its range.

Yes, It is a function because every element in set x

14 If $(x^2, |y|) = (4, 3)$ and (x, y) located in the 3rd quadrant, then find $x + y$.

-5

15 The opposite figure:
represents the curve of the function
 $f(x) = x^2 - (k - 2)x - k + 4$
and $ABCO$ is a square.
Find the value of k



$k = 3$

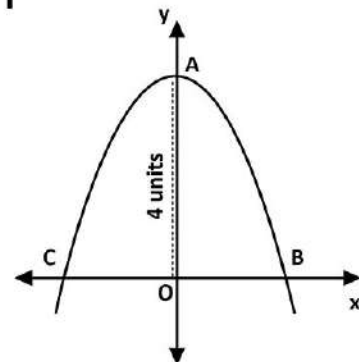
16 The opposite figure represents the curve of the function f
where $f(x) = m - x^2$, if $OA = 4$ units, Find:

a The value of m 4

b The coordinates of B and C $(2, 0), (-2, 0)$

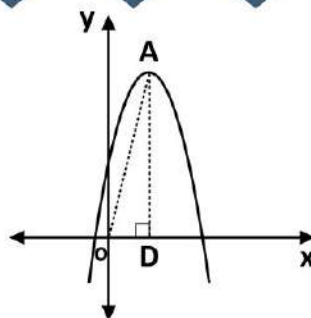
c The area of ΔABC

8 square



- 17 The opposite figure represents the curve of the function $f : f(x) = -x^2 + 6x + k$, if the area of $\Delta OAB = 24$ square units where A is the point of the vertex of the curve, then find the value of k

$$k = 7$$



- 18 If $X \times Y = \{(2, 3), (2, 6), (2, 7)\}$, Find:

a) X and Y.

b) Y^2

c) $n(X^2)$

$$X = \{2\} \quad \{(3,3), (3,6), (3,7), (6,3), (6,6), (6,7),$$

$$Y = \{3, 6, 7\} \quad (7,3), (7,6), (7,7)\}$$

1

- 19 If $X = \{2, 1, 0, -1, -2\}$, and R is a relation on X, where aRb means (a is the additive inverse of b) for every $a, b \in X$.

Write the relation R and represent it with a Cartesian diagram.

$$R = \{(2, -2), (1, -1), (0, 0), (-1, 1), (-2, 2)\}$$

- 20 If $X = \{1, 3, 5\}$ and R is a function on X, and relation R is $\{(a, 3), (b, 1), (1, 5)\}$. Find:

a) The range of the function $X = \{3, 1, 5\}$

b) The numerical value of the expression: $a + b$

$$a + b = 8$$

- 21 If $X = \{2, 3, 4\}$, $Y = \{8, 6, 10, 11, 15\}$, and R is a relation from X to Y where aRb means (a is a factor of b) for every $a \in X$ and $b \in Y$. $R = \{(2, 8), (2, 6), (2, 10), (3, 6), (3, 15), (4, 8)\}$. First: Write the relation R and represent it with an arrow diagram. Second: Is R a function or not? State the reason.



Q1: Choose the correct answer

1 If y is the middle proportional between x and z , then $\frac{x}{z} = \dots\dots$

☐ a $\frac{x^2}{y^2}$

☒ b $\frac{y^2}{z^2}$

☐ c $\frac{z^2}{y^2}$

☐ d $\frac{y^2}{x^2}$

2 If $a, b, 2, 3$ are proportional, then $\frac{b}{a} = \dots\dots\dots$

☒ a $\frac{3}{2}$

☐ b $\frac{2}{3}$

☐ c 3

☐ d 2

3 If $4x^2 = 9y^2$, then $\frac{x}{y} = \dots\dots\dots$

☐ a $\frac{9}{4}$

☐ b $\frac{3}{2}$

☒ c $\pm \frac{3}{2}$

☐ d $\pm \frac{2}{3}$

4 If $5a - 4b = 0$, then $\frac{a}{b} = \dots\dots\dots$

☒ a $\frac{4}{5}$

☐ b $\frac{5}{4}$

☐ c $\frac{-4}{5}$

☐ d $\frac{-5}{4}$

5 If $\frac{4}{x} = \frac{7}{y} = \frac{b}{y-x}$, then $b = \dots\dots\dots$

☒ a 3

☐ b -3

☐ c 11

☐ d -11

6 If $\frac{a}{b} = \frac{c}{d} = m$ where $m \neq 0$, then $\frac{a \times c}{b \times d} = \dots\dots\dots$

☐ a $2m^2$

☒ b m^2

☐ c m

☐ d $2m$

7 If $\frac{x}{5} = \frac{y}{4} = \frac{x+2y}{k}$, then $k = \dots\dots\dots$

☐ a 9

☒ b 13

☐ c 14

☐ d 8

8 The positive middle proportional between a and b is

☒ a $\sqrt{ab}$

☐ b $-\sqrt{ab}$

☐ c $\pm\sqrt{ab}$

☐ d ab

9 The third proportional of 9 and -12 is

☐ a -16

☐ b 8

☒ c 16

☐ d 108



10 If 6 is the middle proportional between m and 2, then m =

(a) 8

(b) 12

(c) 18

(d) 36

11 If $\frac{a}{b} = \frac{b}{c} = \frac{c}{5} = 2$, then a =

(a) 5×2^2

(b) 40

(c) 10

(d) 2×5^3

12 If a, 2, 4, b are in a continued proportional, then a + b =

(a) 1

(b) 8

(c) 7

(d) 9

13 If $y^2 + 4x^2 = 4xy$, then

(a) $y \propto x$

(b) $y \propto x^2$

(c) $y \propto \frac{1}{x}$

(d) $y \propto \frac{1}{x^2}$

14 If $Y - X = \frac{2}{y} - \frac{2}{x}$, $X \neq 0$, $Y \neq 0$, then $y \propto$

(a) $y \propto x + 1$

(b) $y \propto x$

(c) $y \propto \frac{1}{x}$

(d) $y \propto \frac{1}{x^2}$

15 If $y = \frac{2}{x^2}$ where m is a constant $x \neq 0$, then $y \propto$

(a) x^2

(b) x

(c) $\frac{1}{x^2}$

(d) $\frac{1}{x}$

16 If $x - 2y = 0$, then $x \propto$

(a) y^2

(b) y

(c) $\frac{1}{y^2}$

(d) $\frac{1}{y}$

17 The relation that represents a direct variation between x and y is

(a) $xy = 5$

(b) $y = x + 2$

(c) $\frac{x}{3} = \frac{4}{y}$

(d) $\frac{x}{5} = \frac{y}{2}$

18 If $xy^5 = \text{constant}$, then x varies inversely as

(a) $\frac{1}{5}$

(b) y^5

(c) y

(d) y^2

19 The number that must be added to the numbers 1,3,6 to be in a continued proportional is

(a) 1

(b) 2

(c) 3

(d) 4



20 If $y \propto x$ and $y = 2$ as $x = 4$, then $y = \dots x$

☒ a $\frac{1}{2}$

☐ b 4

☐ c 3

☐ d 2

21 If $x^2y^2 + \frac{1}{4} = xy$, then

☐ a $x \propto y$

☐ b $y \propto x$

☒ c $y \propto \frac{1}{x}$

☐ d $2x \propto 5y$

22 The middle proportional between 5 and 20 is

☐ a 10

☐ b -10

☐ c 100

☒ d ± 10

23 The middle proportional between $(x - 2)$ and $(x + 2)$ is

☐ a $\sqrt{x + 2}$

☐ b $\sqrt{x^2 - 4}$

☐ c $x^2 - 4$

☒ d $\pm \sqrt{x^2 - 4}$

24 If $\frac{a}{b} = \frac{2}{3}$ and $\frac{a}{c} = \frac{4}{5}$, then $b : c = \dots$

☐ a 3 : 4

☐ b 5 : 6

☒ c 6 : 5

☐ d 4 : 3

25 If $\frac{a}{5} = \frac{b}{7}$, then $7a - 5b + 3 = \dots$

☒ a 3

☐ b 7

☐ c 5

☐ d 2

26 If $3a = \frac{5}{6}b$, then $\frac{a}{b} = \dots$

☐ a $\frac{18}{5}$

☐ b $\frac{15}{6}$

☐ c $\frac{6}{15}$

☒ d $\frac{5}{18}$

27 If $y \propto x$ and $x = 1$ when $y = 4$, then the variation constant =

☒ a 4

☐ b 3

☐ c 2

☐ d 1

28 If $\frac{a}{b} = \frac{c}{d} = \frac{3}{5}$, then $\frac{a+c}{b+d} = \dots$

☐ a $\frac{5}{3}$

☒ b $\frac{3}{5}$

☐ c $\frac{6}{5}$

☐ d $\frac{5}{6}$



29 If a, b, c and d are in continued proportion, and $a + b + c = 5$, $b + c + d = 7$, then $\frac{a}{b} = \dots\dots\dots$

☒ a $\frac{5}{7}$

☐ b $\frac{7}{5}$

☐ c $\frac{-5}{7}$

☐ d $\frac{-7}{5}$

30 If $\frac{x}{5} = \frac{y}{4} = \frac{x+2y}{k}$, then $k = \dots\dots\dots$

☐ a 9

☐ b 14

☒ c 13

☐ d 8

31 If $\frac{a}{b} = \frac{3}{5}$, find the value of $6b - 10a - 3 = \dots\dots\dots$

☐ a 3

☐ b 4

☐ c -4

☒ d -3

32 If $\frac{a}{5} = \frac{b}{2} = \frac{h}{3} = \frac{2a+3b-2h}{k}$, then $k = \dots\dots\dots$

☐ a -10

☐ b 2

☒ c 10

☐ d 22

33 If $a, 3, 9, b$ are continued proportional quantities, find the value of: $b + a = \dots\dots\dots$

☐ a 3

☐ b 9

☐ c 27

☒ d 28

34 If $x - 1, 2, 4$ and $x + 1$ are proportional quantities, then $x = \dots\dots\dots$, $x \in \mathbb{N}$

☐ a -3

☒ b 3

☐ c ± 3

☐ d 9

35 If a, x, b and $2x$ are proportional quantities, then $a : b = \dots\dots\dots$

☒ a $1 : 2$

☐ b $2 : 1$

☐ c $1 : 3$

☐ d $1 : 4$

36 If $x^4y^2 - 14x^2y + 49 = 0$, then y varies as $\dots\dots\dots$

☐ a x

☐ b x^2

☒ c $\frac{1}{x^2}$

☐ d $\frac{5}{x^2}$

37 The number that, when added to the numbers 1, 3, and 6, makes them a continued proportion is $\dots\dots\dots$

☐ a 2

☒ b 3

☐ c 1

☐ d 4



38 If $y^2 + 4x^2 = 4xy$, then

☒ a $y \propto x$

☐ b $y \propto x^2$

☐ c $y \propto \frac{1}{x}$

☐ d $y \propto \frac{1}{x^2}$

39 If $y \propto x$ and $y = 5$ when $x = 3$, then the constant proportional x equals

☐ a 15

☐ b 5

☐ c 3

☒ d $\frac{5}{3}$

40 If $X, 8, X^2$ are in continued proportion, then $X = \dots\dots\dots$

☐ a $8X^3$

☐ b 8

☐ c X^3

☒ d 4

41 If $x, 4, y, 5$ are proportional quantities, then $x : y = \dots\dots\dots$

☒ a 4 : 5

☐ b 5 : 4

☐ c 4 : 1

☐ d 5 : 1

42 If the wage received by worker (A) is directly proportional to the number of hours he works (x), what is the equation that represents this relationship?

☐ a $A = m + x$

☒ b $A = m x$

☐ c $A = x \div m$

☐ d $A = m \div x$

43 The ratio between the area of a square shaped region of side length (L) cm : the area of a square shaped region of side length ($3L$) cm is

☐ a 1 : 3

☐ b 3 : 1

☒ c 1 : 9

☐ d 9 : 1

44 If $x^2 y^2 - 12 xy + 36 = 0$, then $y \propto \dots\dots\dots$

☐ a x

☐ b x^2

☒ c $\frac{1}{x}$

☐ d $\frac{1}{x^2}$

45 If a, x, b and $2x$ are proportional quantities, then $b : a = \dots\dots\dots$

☐ a 1 : 2

☒ b 2 : 1

☐ c 1 : 3

☐ d 1 : 4

46 If $x - 1, 2, 4$ and $x + 1$ are proportional quantities, then $x = \dots\dots\dots$, x belongs to N

☐ a -3

☒ b 3

☐ c ± 3

☐ d 9



Q2: Answer The Following

1 If $a, 3, 9, b$ are in a continued proportion, find the value of a and b .

$$a = 1$$

$$b = 27$$

2 If a, b, c and d are proportional quantities, prove that: $\frac{a + 2c}{b + 2d} = \frac{c - a}{d - b}$

Both side equals m

3 Two integer numbers, the ratio between them is $3 : 7$ and if we subtracted 5 from each them , the ratio between them becomes $1 : 3$, find the two numbers.

$$x = 5$$

The two numbers are: 15, 35

4 If a, b, c, d are in a continued proportional quantities, Then prove that: $\frac{ab - cd}{b^2 + c^2} = \frac{a - c}{b}$

Both side equals $\frac{m^2 - 1}{m}$

5 If $\frac{a + b}{b} = \frac{c + d}{d}$, prove that a, b, c and d are proportional.

$$\frac{a}{b} = \frac{c}{d}$$



6 If y varies directly with x, and y = 14 when x = 2, find:

First: the relationship between y and x.

Second: the value of y when x = 3.

$$\text{Relationship: } y = 7x$$

$$y = 21$$

7 If y inversely changes with x and y = 6 when x = 5, find the relationship between y and x then find the value of x when y = 2.

$$\text{Relationship: } y = \frac{30}{x}$$

$$x = 15$$

8 If a,b,c,d are proportional quantities, then prove that: $\frac{a}{b-a} = \frac{c}{d-c}$

$$\text{Both side equals } \frac{m}{1-m}$$

9 If $\frac{a}{2} = \frac{b}{3} = \frac{c}{4} = \frac{2a-2b+5c}{3k}$, Find the value of k

$$k = 6$$

10 If a, b, c, and d are proportional quantities, Prove that: $\frac{a+2c}{b+2d} = \frac{3a+c}{3b+d}$

$$\text{Both side equals: } m$$

11 If a, 6, b and 54 are four positive quantities in continued proportional, Find the value of a and b.

$$a = 2, b = 18$$



12) If $\frac{a}{b+c} = \frac{1}{3}$, $\frac{c}{a+b} = \frac{5}{7}$, Find the value of: $\frac{b}{a+c}$

$$\frac{1}{2}$$

13) If 4, a, $\frac{1}{9b^2}$ are in continued proportion. Find the value of ab

$$\pm \frac{2}{3}$$

14) A worker earns a wage that varies directly with the number of hours worked. If he works 8 hours and earns 120 pounds, how much will he earn if he works 10 hours?

150 pounds

15) If $y \propto x$ and $y = 3$ at $x = 9$ Find:

1] The relation between y , x

2] The value of y at $x = 12$

$$\text{Relationship: } y = \frac{1}{3}x$$

$$y = 4$$

16) If y varies inversely with $\sqrt{x}$, and $y = 2$ when $x = 9$, find the value of x when $y = 3$

$$x = 4$$

17) If $\frac{x-2y}{x+3y} = \frac{1}{3}$, Find the value of $\frac{y}{x}$

$$\frac{2}{9}$$



18 If $\frac{x}{3} = \frac{y}{4} = \frac{z}{5}$, Prove that $\frac{2y - z}{3x - 2y + z} = \frac{1}{2}$

Both side equals $\frac{1}{2}$

19 If b is the middle proportional between a and c, Prove that: $\frac{a^2 + b^2}{b^2 + c^2} = \frac{a}{c}$

Both side equals: m^2

20 If $\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = \frac{2}{3}$, and $5a - 3c + e = 18$ Find the value of $5b - 3d + f$

27

21 Find the number that if added to the two terms of the ratio 7 : 11 it becomes 2 : 3

The number is 1

22 If $\frac{x+y}{25} = \frac{x-y}{11} = \frac{x+y-z}{8}$, Prove that: $x : y : z = 18 : 7 : 17$

23 If Y varies directly as X and Y = 20 as X = 7, Find the relation between X and Y, then find the value of X as Y = 4.

Relationship: $y = \frac{20}{7}x$

$x = 1.4$



24 If $(x - y) \propto \left(\frac{1}{y} - \frac{1}{x}\right)$. Prove that: $y \propto \frac{1}{x}$

$xy = m$, So proved

25 If a, b, c and d are proportional quantities, prove that: $\frac{ac}{bd} = \left(\frac{a - c}{b - d}\right)^2$

Both side equals: m^2

26 If $x^2y^2 - 6xy + 9 = 0$, Prove that $y \propto \frac{1}{x}$

$xy = 3$, So proved

27 Find the number that if added to the numbers 3, 5, 9, and 13 it becomes proportional.

$x = 3$

28 If $\frac{x}{3} = \frac{y}{4} = \frac{z}{5}$, find the value of: $\frac{x - y + z}{2x + y}$.

$\frac{2}{5}$

29 If $\frac{a + b}{a - b} = \frac{c + d}{c - d}$, Prove that a, b, c and d are in proportion

$\frac{a}{b} = \frac{c}{d}$



- 30** A car is moving at a constant velocity such that the distance traveled (d) is directly proportional to the time (t). If the car travels 150 kilometers in 6 hours, How many kilometers does the car travel in 10 hours?

250 km

- 31** If $\frac{x+y}{9} = \frac{y+z}{7}$, Prove that: $\frac{x-z}{x+2y+z} = \frac{1}{8}$

$x - z = 2m,$
 $x + 2y + z = 16m$

- 32** If $\frac{a+2h}{6} = \frac{b+3c}{3}$, Prove that: $a \propto c$

$a = 6c$

- 33** If $a : (b + c) = 1 : 3$, $c : (a + b) = 5 : 7$ then, Find the value of $b : (a + c)$

The ratio = 1 : 2

- 34** If y middle proportional between x and z: $x = 4$ and $z = 4$ find the value of $x^2 + y^2 + z^2$

48

- 35** If $\frac{y}{x-z} = \frac{x}{y} = \frac{x+z}{y}$, prove that all of these ratios equal 2 (unless $x + y = 0$).



Q1: Choose the correct answer

1 The difference between the greatest value and the smallest value is called

- ☐ a median ☐ b mean ☒ c range ☐ d mode

2 If the function $f(x) = (k - 3)x^3 + 2x^m + 1$ is of 2nd degree, then $k+m =$

- ☒ a 5 ☐ b 3 ☐ c 2 ☐ d -5

3 If all individuals are equal, then

- ☐ a $x = 0$ ☐ b $\bar{x} = 0$ ☒ c $\sigma = 0$ ☐ d mode = 0

4 The positive square root of the average of squares of deviations of the values from their mean is called

- ☐ a median ☐ b mean ☐ c range ☒ d standard deviation

5 The mean of the values 7, 3, 6, 9, 5 is

- ☐ a 3 ☒ b 6 ☐ c 4 ☐ d 12

6 The simplest and easiest method of measuring dispersion is

- ☐ a median ☐ b mean ☒ c range ☐ d standard deviation

7 Selecting a sample of layers of a statistical society is called

- ☐ a random ☒ b class (layer) ☐ c deliberate ☐ d bunch

8 is a secondary resource of collecting data.

- ☐ a Personal interview ☐ b Questionnaires
☒ c Data base of the employees ☐ d Observing and measuring



9 If the arithmetic mean of the values : $a, 5, 8, 7, 6$ is 6, then $a = \dots\dots\dots$

☐ a 4

☐ b 6

☐ c 8

☐ d 30

10 If 67 is the greatest value and the range is 27, then the smallest value is

☐ a 67

☒ b 40

☐ c 27

☐ d 94

11 If the range of the values : $6 + k, 6 - k, 6 + 5k$ and $6 - 2k$ is 14 where $k \in \mathbb{N}$, then $k = \dots\dots\dots$

☐ a 1

☒ b 2

☐ c 3

☐ d 4

12 The commonest measure of dispersion and the most accurate is the

☐ a median

☐ b mean

☐ c range

☒ d standard deviation

13 If $\sum (x - \bar{x})^2 = 48$ of a set of values and the number of these values is 12, then $\sigma = \dots\dots\dots$

☐ a -4

☐ b 4

☐ c -2

☒ d 2

14 If the arithmetic mean of the values : $a, 5, 8, 7, 6$ is 6, then $a = \dots\dots\dots$

☒ a 4

☐ b 6

☐ c 8

☐ d 30

15 If the dispersion of the values : $X + 1, y + 4$ is zero, then $X - y = \dots\dots\dots$

☐ a -1

☐ b -4

☒ c 3

☐ d 4

16 If the range of the values : $7, k, 8, 9, 5$ is 6, then $k = \dots\dots\dots$

☐ a 4

☒ b 3

☐ c 6

☐ d 12

17 If the standard deviation for the values : $X + 1, y, 4$ equals zero, then $X y = \dots\dots\dots$

☐ a 4

☒ b 12

☐ c 16

☐ d 20


18 The appropriate method for testing the salinity levels of water from one of the wells is

a Mass population

b samples

c survey

d interview

19 The range to the values 3, 3, 3, 3, 3 is

a 3

b 1

c 0

d 12

20 If the smallest item of a set of values is 15 and the range of this set is 50, Find the value of the greatest item =

a 65

b 35

c 16

d 750

Q2: Answer The Following

1 Calculate the mean and the standard deviation of the following values:

a 15, 6, 8, 12, 4.

b 5, 6, 7, 8, 9.

mean = 9

$\sigma = 4$

mean = 7

$\sigma = 1.41$

2 The following frequency distribution shows the ages of 10 children:

Age in year	5	8	9	10	12	Total
Number of children	1	2	3	3	1	10

Calculate the standard deviation of the ages in years.

mean = 9.2

$\sigma = 1.74$



- 3 Find the standard deviation of the values : 16, 32 ,56 , 20, 27 mean = 30.2
 $\sigma = 14.03$

- 4 Calculate the mean and the standard deviation for the following frequency distribution :

mean = 11.6
 $\sigma = 5.66$

sets	0-	4-	8-	12-	16-20	Total
frequency	3	4	7	2	9	25

Calculate the mean and the standard deviation of the number of children

- 5 Calculate the arithmetic mean and standard deviation for the following values 13, 14, 17, 19, 22 approximate the result to the nearest two decimal digits. mean = 17
 $\sigma = 3.29$

- 6 If the range of the values 2, 7, b, 6 is 8, where $b > 0$, Find the value of b.

$b = 9$

اللهم اجعل هذا العمل خالصا لوجهك الكريم
واكتب له القبول والنفع يا كريم يا وهّاب.



ACCUMULATIVE

1 $2^{100} = 2^{99} + \dots$

a 2

b 1

c 2^{99}

d 99

2 If $x^3 = \frac{1}{8}$, then $x = \dots$

a $\frac{1}{2}$

b $\frac{1}{3}$

c 3

d -3

3 If $X = \{a, a^3\}$, then a may be equal to $\dots$

a -1

b 0

c 1

d 3

4 Double of 2^8 is $\dots$

a 2^{10}

b 2^{16}

c 4^4

d 2^9

5 $x^2 - y^2 = 16$, and $x + y = 8$, then $x - y = \dots$

a 2

b 1

c 24

d 32

6 If $6^x = 12$, then $6^{x+1} = \dots$

a 66

b 13

c 27

d 72

7 $(\sqrt{7} - 2)(\sqrt{7} + 2) = \dots$

a 11

b 3

c 28

d $\sqrt{7} + 4$

8 $x^3 y^{-3} = 8$, then $\frac{y}{x} = \dots$

a $\frac{1}{512}$

b $\frac{1}{8}$

c $\frac{1}{2}$

d 2

9 The S.S of $x^2 + 16 = 0$ is $\dots$

a {4}

b {-4}

c {4, -4}

d $\emptyset$



10) If $3a = \sqrt{4}b$, then $\frac{a}{b} = \dots\dots\dots$

☒ a $\frac{2}{3}$

☐ b $\frac{3}{2}$

☐ c $\frac{3}{4}$

☐ d $\frac{4}{3}$

11) If $2^x = 8$, then $x^2 = \dots\dots\dots$

☐ a 2

☐ b 3

☐ c 4

☒ d 9

12) $R - Q = \dots\dots\dots$

☐ a Z

☒ b $\bar{Q}$

☐ c $\emptyset$

☐ d R^+

13) If $\sqrt{x} = 3$, then $x = \dots\dots\dots$

☐ a 3

☐ b 6

☒ c 9

☐ d $\sqrt{3}$

14) If $2^{x-4} = \frac{1}{16}$, then $x = \dots\dots\dots$

☐ a $\frac{1}{4}$

☐ b $\frac{1}{3}$

☐ c $\frac{1}{2}$

☒ d 0

15) If $-1 < x < 3$, $x \in R$, then $(x + 1) \in \dots\dots\dots$

☐ a $\{0, 3\}$

☐ b $[-1, 3[$

☐ c $\{0, 4\}$

☒ d $]0, 4[$

16) Half of $2^{20} = \dots\dots\dots$

☐ a 2^5

☐ b 5^4

☒ c 2^{19}

☐ d 2^{10}

17) If $x - y = 5$, $x + y = \frac{1}{5}$, then $x^2 - y^2 = \dots\dots\dots$

☐ a $\frac{1}{25}$

☒ b 1

☐ c 25

☐ d 5

18) The sum of real numbers in the interval $] -3, 3]$ equals $\dots\dots\dots$

☒ a 3

☐ b zero

☐ c -3

☐ d can not sum



Second Geometry

Q1: Choose the correct answer

- 1 If $\sin 70^\circ = \cos X$ where X is the measure of an acute angle , then $X = \dots\dots\dots$
 - a 60°
 - b 45°
 - c 10°
 - d 20°
- 2 In ΔABC , If $m(\angle B) = 90^\circ$, then $\sin A + \cos C = \dots\dots\dots$
 - a $2 \sin A$
 - b $2 \sin C$
 - c $2 \sin B$
 - d $2 \cos A$
- 3 In ΔABC , If $m(\angle A) = 85^\circ$ and $\sin B = \cos B$, then $m(\angle C) = \dots\dots\dots$
 - a 30°
 - b 45°
 - c 50°
 - d 60°
- 4 For any two acute angles A and B , if $\sin A = \cos B$, then $m(\angle A) + m(\angle B) = \dots\dots\dots$
 - a 30°
 - b 180°
 - c 90°
 - d 60°
- 5 ΔABC is a right-angled triangle at A ,then cosine angle B : sine angle C equals $\dots\dots\dots$
 - a $\frac{4}{3}$
 - b $\frac{5}{3}$
 - c $\frac{3}{4}$
 - d 1
- 6 The angle whose measure is 50° supplements an angle of measure $\dots\dots\dots$
 - a 40°
 - b 90°
 - c 130°
 - d 180°
- 7 ABC is a right-angled triangle at B where $3 AC = 5 BC$, then $\tan A = \dots\dots\dots$
 - a $\frac{4}{3}$
 - b $\frac{5}{3}$
 - c $\frac{3}{4}$
 - d $\frac{3}{5}$
- 8 $\sin 30^\circ + \cos 60^\circ = \dots\dots\dots$
 - a $\frac{1}{4}$
 - b 0
 - c 1
 - d $\frac{\sqrt{3}}{2}$



9 If X is the measure of an acute angle, $2 \sin X - 0 = 1$, then $X = \dots\dots\dots$

- (a) 60° (b) 45° (c) 90° (d) 30°

10 If $\cos(X + 10^\circ) = \frac{1}{2}$ where $(X + 10^\circ)$ is the measure of an acute angle, then $X = \dots\dots\dots$

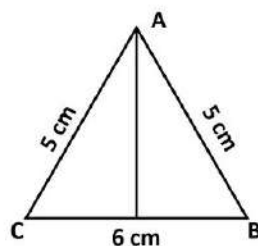
- (a) 50° (b) 70° (c) 40° (d) 30°

11 If X and y are complementary angles where $X : y = 1 : 2$, then $\sin X + \cos y = \dots\dots\dots$

- (a) $\frac{1}{4}$ (b) $\frac{1}{2}$ (c) 1 (d) $\frac{\sqrt{3}}{2}$

12 In the opposite figure:
 $\cos B = \dots\dots\dots$

- (a) $\frac{4}{5}$ (b) $\frac{3}{5}$ (c) $\frac{5}{6}$ (d) $\frac{5}{4}$



13 In ΔABC , If $m(\angle A) : (\angle B) : (\angle C) = 5 : 4 : 3$, Then $\cos B = \dots\dots\dots$

- (a) Zero (b) $\frac{1}{2}$ (c) 1 (d) $\frac{\sqrt{3}}{2}$

14 If The straight line: $y = X \sin 30^\circ + c$ passes through the point $(4, 6)$, then $c = \dots\dots\dots$

- (a) 4 (b) 6 (c) 8 (d) 2

15 The tangent of an acute angle of the right isosceles triangle is equal to $\dots\dots\dots$

- (a) $\sqrt{3}$ (b) $\frac{1}{\sqrt{3}}$ (c) 1 (d) $\frac{\sqrt{2}}{2}$

16 If $2 \sin X = \tan X$ where X is an acute angle, then $m(\angle X) = \dots\dots\dots$

- (a) 60° (b) 45° (c) 15° (d) 30°

17 If $\tan X = \frac{1}{\sqrt{3}}$ where X is the measure of an acute angle, then $\sin 2X = \dots\dots\dots$

- (a) $2\sqrt{3}$ (b) $\frac{2}{\sqrt{3}}$ (c) $\frac{\sqrt{3}}{2}$ (d) 3



$$x = \sqrt{\frac{b^2}{c} + c} - \frac{b}{2}$$



$$a^3/a^m = a^{m-n}$$

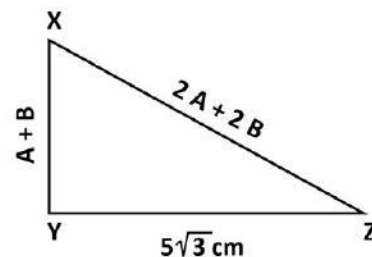
$$c^2 = a^2 + b^2$$

18) ΔABC is right-angled at A, if $\tan B = 1$, then $\tan C - \sin C \cos C = \dots\dots\dots$

- (a) Zero (b) 1 (c) 2 (d) $\frac{1}{2}$

19) In the opposite figure:
Perimeter of triangle XYZ = cm

- (a) $15 + \sqrt{3}$ (b) $15 + 5\sqrt{3}$
(c) $15 - \sqrt{3}$ (d) $3 + \sqrt{15}$



20) If $\cos (X + 10^\circ) = \frac{1}{2}$ where $(X + 10^\circ)$ is the measure of an acute angle, then $x = \dots\dots$

- (a) 30° (b) 40° (c) 50° (d) 70°

21) If $\sin 2X = \frac{1}{2}$ where $2X$ is the measure of an acute angle, then $\tan 3X = \dots\dots$

- (a) $\sqrt{3}$ (b) $\frac{1}{\sqrt{3}}$ (c) 1 (d) $\frac{1}{2}$

22) If the point $(3, b - 5)$ lies on the x-axis, then $2b + 1 = \dots\dots\dots$

- (a) Zero (b) 5 (c) 11 (d) 8

23) If the point $(x - 2, 3 - x)$ lies in the fourth quadrant, then one of the possible values of x is

- (a) 3 (b) 2 (c) 4 (d) 1

24) If $\sin x = \frac{\sqrt{3}}{2}$, where x is a positive acute angle, then $16\cos^2 x = \dots\dots\dots$

- (a) 1 (b) 2 (c) 4 (d) 8

25) If $\tan x = \frac{1}{\sqrt{3}}$, where x is a positive acute angle, then $8\cos 2x = \dots\dots\dots$

- (a) 1 (b) 2 (c) 4 (d) 8



26 If $\tan 2a = \sqrt{3}$ when $(2a)$ is a positive acute angle, then $a = \dots\dots\dots$

- (a) 30° (b) 45° (c) 60° (d) 90°

27 If $\sin 2X = \frac{1}{2}$ where $2X$ is the measure of an acute angle, then $\tan 3X = \dots\dots\dots$

- (a) $\sqrt{3}$ (b) $\frac{1}{\sqrt{3}}$ (c) 1 (d) $\frac{1}{2}$

28 If X is the measure of an acute angle, $2 \sin X - 1 = 0$, then $X = \dots\dots\dots$

- (a) 60° (b) 45° (c) 90° (d) 30°

29 If $\cos a \tan 30^\circ = \cos^2 45^\circ$, when a is a positive acute angle, then $a = \dots\dots\dots$

- (a) 60° (b) 45° (c) 90° (d) 30°

30 If ΔABC , is right-angled at B , its area = $\frac{1}{2} (AB)^2$, then $\tan C = \dots\dots\dots$

- (a) $\sqrt{3}$ (b) $\frac{1}{\sqrt{3}}$ (c) 1 (d) $\frac{\sqrt{3}}{2}$

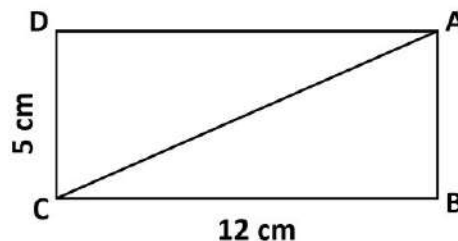
Q2: Answer The Following

1 In the opposite figure:

ABCD is a rectangle, $AB = 5 \text{ cm}$, $BC = 12 \text{ cm}$

Find: (a) The length of AC

(b) The value of: $5 \tan(\angle ACD) - 13 \sin(\angle DAC)$

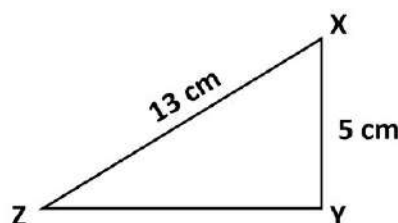


- 2 ABCD is an isosceles trapezoid in which : $\overline{AD} \parallel \overline{BC}$, $AD = 4$ cm, $AB = 5$ cm and $BC = 12$ cm

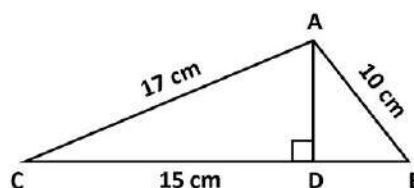
Prove that: $\frac{5 \tan B \cos C}{\sin^2 C + \cos^2 B} = 3$

- 3 Without using the calculator , prove that : $\cos 60^\circ + 2 \sin^2 45^\circ = \sin 30^\circ + 3 \tan^2 30^\circ$

- 4 In the opposite figure:
XYZ is a right angle, $m(\angle Y) 90^\circ$
 $XY = 5$ cm, $XZ = 13$ cm.
Find $\sin X \cos Z + \cos X \sin Z$



- 5 In the opposite figure:
 $AD \perp BC$, $AC = 17$ cm, $DC = 15$ cm, $AB = 10$.
Find the value of:
 $3 \tan(\angle C) + \sin(\angle B)$

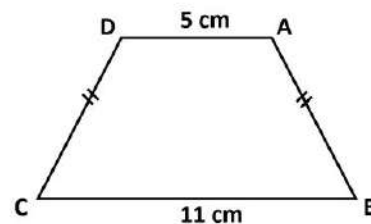


6 ABCD is an isosceles trapezium in which :

AB = AD = DC = 5 cm, BC = 11 cm, Find:

a) $m(\angle B)$, $m(\angle A)$

b) Area of trapezium ABCD



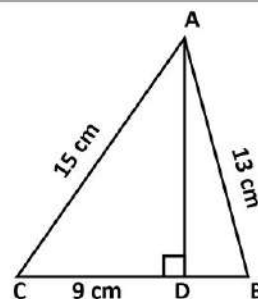
7 If $\sin X = \tan 30^\circ \sin 60^\circ$ where X is the measure of an acute angle
Find without using the calculator the value of : $4 \cos X \sin X$

8 In the opposite figure:

$AB \perp BC$, $AB = 13\text{cm}$, $AC = 15\text{ cm}$, $CD = 9$

Find in the simplest form the value of

$$\frac{\tan(\angle CAD) - \tan(\angle BAD)}{\tan(\angle CAD) + \tan(\angle BAD)}$$



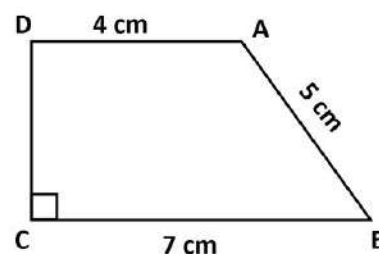
9 A ladder of length 6 m, its upper end A is on a vertical wall and its lower end B is on a horizontal ground, if C is the projection of the point A on the ground and the ladder inclines by an angle of measure 60° on the ground, Find the length of AC



- 10 Without using calculator find the value of h (where h is an acute angle)
If : $\tan (h - 5)^\circ = \sin 30^\circ \cos 60^\circ + \cos^2 30^\circ$

- 11 ABCD is a rectangle whose diagonal length $AC = 24$ cm, $m(\angle ACB) = 25^\circ$,
Find the length of BC

- 12 In the opposite figure:
ABCD is a right-angled trapezium at C,
 $AD \parallel BC$, $AB = 5$ cm, $BC = 7$ cm, $AD = 4$ cm
Find: **a** Sin B **b** Surface area of trapezium ABCD
(note: draw $AH \perp BC$ to cut it a H).



- 13 ABC is a right-angled triangle at C, $AB = 5$ cm, $BC = 3$ cm, Find:
a The length of AC **b** $\sin A$, $\sin B$, $\tan A$ $\tan B$

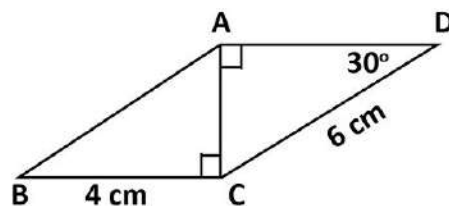


- 14) XYZ is a right-angled triangle at Y, $XY = 3$ cm, $XZ = 5$ cm. Prove that:
 $\cos X \cos Z = \sin X \sin Z$

- 15) If $\frac{1}{2} \cos x = \sin^2 60^\circ + \cos 60^\circ - \tan 45^\circ$, Find the value of x
 (where x is a positive acute angle)

- 16) If $2\sin x = \sin 30^\circ \cos 60^\circ + \cos 30^\circ \sin 60^\circ$, find the value of x where x is an acute angle.

- 17) In the opposite figure:
 $m(\angle D) = 30^\circ$, $m(\angle CAD) = m(\angle ACB) = 90^\circ$
 $BC = 4$ cm, $CD = 6$ cm.
 Find: $\tan B$



- 18) If $\cos x \tan 30^\circ = \cos^2 45^\circ$, find the value of x where x is an acute angle.



Q1: Choose the correct answer

1 If the two straight lines : $X + y = 5$, $kX + 2y = 0$ are parallel: then $k = \dots\dots\dots$

a -2

b -1

c 1

d 2

2 The slope of the straight line parallel to x-axis is

a -1

b 0

c 1

d undefined

3 If the X-axis bisects AB such that A (3 , 2) and B (-2 , y), then $y = \dots\dots\dots$

a 3

b 2

c -2

d 4

4 A circle has a surface area of $4\pi \text{ cm}^2$, then its radius length is cm.

a 4

b 2

c 4π d 2π

5 The distance between the two points (3 , 0) and (0 , -4) equals length units

a 4

b 5

c 6

d 7

6 If m_1 , m_2 are the slopes of two parallel straight lines , then

a $m_1 - m_2 = 0$ b $m_1 + m_2 = 0$ c $m_1 m_2 = 0$ d $m_1 - m_2 \neq 0$

7 If the straight line $y = kx + 1$ is parallel to the straight line $2y - X = 5$, then $k = \dots\dots\dots$

a 1

b 2

c -2

d $\frac{1}{2}$

8 The distance between the point $(\sqrt{3} , 1)$ and the origin point is Length unit

a 4

b 3

c $\sqrt{10}$

d 2



9 The equation of the straight line which passes through the point (3 , -5) and parallel to y-axis is

- (a) $x = 3$ (b) $y = 2$ (c) $y = -5$ (d) $x = -5$

10 If the two straight lines whose slopes are $-\frac{4}{3}$ and $\frac{k}{2}$ are parallel, then $k = \dots$

- (a) $-\frac{4}{8}$ (b) $\frac{1}{3}$ (c) $-\frac{8}{3}$ (d) $\frac{8}{3}$

11 If $AB \perp CD$, and the slope of $AB = \frac{1}{5}$, then the slope of $CD = \dots\dots\dots$

- (a) -5 (b) $-\frac{1}{5}$ (c) 5 (d) $\frac{1}{5}$

12 The length of the line segment which is drawn between the points (0 , 0) and (5 , 12) =

- (a) 5 (b) 7 (c) 12 (d) 13

13 ABCD is a rhombus where $A(5 , 3)$, $C(-2 , -4)$, then the slope of $BD = \dots\dots\dots$

- (a) $-\frac{1}{7}$ (b) $\frac{1}{7}$ (c) -1 (d) 1

14 A circle of centre at the origin point and its radius length is 2 length units ,which of the following points belongs to the circle ?

- (a) (1 , -2) (b) $(\sqrt{3} , 1)$ (c) $(-2 , \sqrt{5})$ (d) (0 , 1)

15 The perpendicular distance between the two straightlines: $X + 2 = 0$, $X - 4 = 0$ equals unit length.

- (a) 5 (b) 4 (c) 6 (d) 2

16 Distance between point (2 , -3) and y-axis = unit length.

- (a) 2 (b) -3 (c) $\sqrt{13}$ (d) $\sqrt{5}$



17 The slope of the straight line whose equation : $x - y + 3 = 0$ is

- (a) 3 (b) -1 (c) 1 (d) -3

18 The equation of the straight line which passes through (3 , -4) and parallel to y-axis is

- (a) $x = 3$ (b) $y = 3$ (c) $y = -4$ (d) $x = -4$

19 The distance between the two straight lines: $y + 1 = 0$, $y + 3 = 0$ is unit lengths.

- (a) 4 (b) 2 (c) 1 (d) 5

20 The straight line whose equation is : $2X + 5y - 10 = 0$ cuts from the positive part of x-axis a part of length equals length units

- (a) $\frac{2}{5}$ (b) 2 (c) $\frac{5}{3}$ (d) 5

21 The straight line whose equation: $2y = 3x + 6$ cuts from the positive direction of y-axis a part of length length units.

- (a) $\frac{3}{2}$ (b) 2 (c) 3 (d) 6

22 The equation of the straight line which passes through the point (-2 , -3) and parallel to x-axis is

- (a) $x = -3$ (b) $y = -3$ (c) $y = -2$ (d) $x = -2$

23 If the two straight lines: $y = ax + b$, $y = cx + d$, are perpendicular, then $\times$ = -1

- (a) $a \times d$ (b) $b \times c$ (c) $a \times c$ (d) $b \times d$



24 If the two straight lines: $3X - 4y - 3 = 0$, $ky + 4X - 8 = 0$ are perpendicular, then $k = \dots$

- (a) -3 (b) -4 (c) 4 (d) 3

25 The straight line whose equation is : $3X - 3y + 5 = 0$ makes a positive angle with the positive direction of x-axis , its measure =

- (a) 30° (b) 45° (c) 60° (d) 90°

26 The perpendicular distance between the two straight lines $x - 2 = 0$ and $x + 3 = 0$ equals length units.

- (a) 1 (b) 5 (c) 3 (d) 2

27 The distance between the point $(5, \tan^2 60^\circ)$ and the x-axis is length unit

- (a) 5 (b) 3 (c) $\sqrt{3}$ (d) $\sqrt{5}$

28 If the straight line whose equation is $kx + \sqrt{3}y = 4$ makes an angle of measure 60° with the positive direction of X-axis, then $k = \dots\dots\dots$

- (a) 3 (b) -3 (c) $-\sqrt{3}$ (d) $\sqrt{3}$

29 The equation of the y-axis is

- (a) $X = 0$ (b) $Y = X$ (c) $Y = 0$ (d) $Y = -X$

30 If $\frac{2}{3}, \frac{k}{2}$ are the slopes of two parallel straight lines, then $k = \dots\dots\dots$

- (a) $-\frac{4}{3}$ (b) $-\frac{3}{4}$ (c) $\frac{4}{3}$ (d) 3

31 If AB is a diameter of a circle where $A(-1, 4)$, $B(-3, -2)$, then the area of the circle equals π square units.

- (a) 10 (b) $2\sqrt{10}$ (c) 20 (d) 80



32 If the two straight lines $y = mx + e$, $y = nx + o$ are parallel, (where m , e , n , o are real numbers), then $m - n = \dots\dots\dots$.

- (a) -2 (b) -1 (c) 1 (d) zero

33 The equation of a straight line is: $\frac{x}{2} - \frac{y}{3} = 6$, then it intercepts from the positive part of x-axis a part of length $\dots\dots\dots$ length units.

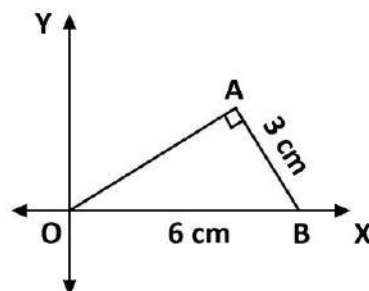
- (a) 3 (b) 12 (c) 6 (d) 18

34 If the two straight lines: $3x - 4y - 3 = 0$, $ky = 1 - 8x$ are perpendicular , then $k = \dots\dots\dots$.

- (a) -6 (b) -3 (c) 3 (d) 6

35 In the opposite figure:
The equation of OA is $y = \dots\dots\dots$.

- (a) $\frac{1}{2} x$ (b) $\frac{1}{3} x$
(c) $\frac{1}{\sqrt{3}} x$ (d) $\sqrt{3} x$



36 If AB is the diameter of the circle where $A(4, -7)$, $B(-2, 1)$, then the center of the circle is $\dots\dots\dots$.

- (a) (1 , -3) (b) (1 , 3) (c) (2 , -6) (d) (0 , 4)

37 If M(1 , 2) is the intersection point of the diagonals of the parallelogram ABCD, where $A(2 , 5)$, then C = $\dots\dots\dots$.

- (a) (0 , 2) (b) (-4 , 1) (c) (0 , -1) (d) (-1 , 0)

38 If ABCD is a square, where $A(3, 5)$ and $C(5, -1)$, then the slope of BD is $\dots\dots\dots$.

- (a) -6 (b) $\frac{1}{3}$ (c) -3 (d) $-\frac{1}{3}$



- 39 If the slope of the straight line = -1 , then the angle it makes with the positive direction of the x-axis is
- (a) Zero (b) Acute (c) Right (d) Obtuse
- 50 If the slope of the straight line is not defined, then the angle it makes with the positive direction of the x-axis is
- (a) Zero (b) Acute (c) Right (d) Obtuse
- 41 If the line AB is parallel to the x-axis where $A(4, 2)$ and $B(-5, y)$, then $y = \dots\dots\dots$
- (a) 2 (b) 0 (c) -2 (d) 4
- 42 If the origin is the midpoint of AB where $A(5, -2)$, then point B is
- (a) $(2, 5)$ (b) $(-2, -5)$ (c) $(5, -2)$ (d) $(-5, 2)$
- 43 If $\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$ and the slope of AB = 0.5 , then the slope of CD =
- (a) -0.5 (b) 2 (c) -2 (d) 0.5
- 44 The lines $y = 3x - 5$ and $2y = 5x + 72$ are straight lines.
- (a) Perpendicular (b) Parallel
(c) Coincident (d) Intersecting and not perpendicular
- 45 The straight line whose equation is $9x - 3y - 6 = 0$, its slope =
- (a) -3 (b) 3 (c) -6 (d) 4
- 46 ABCD is a rhombus where $A(7, 1)$, $B(1, 9)$, then the perimeter = unit length
- (a) 10 (b) 14 (c) 100 (d) 40



Q2: Answer The Following

- 1 ABCD is a quadrilateral where, $A(-3, -2)$, $B(2, -2)$, $C(4, 2)$ and $D(-2, 2)$
Is it a parallelogram or not?

- 2 Prove that the straight line which passes through the two points $(-1, 3)$, $(1, 4)$ is parallel to the straight line whose equation is $2y - x = 1$

- 3 ABCD is a rectangle in which $A(1, 1)$, $B(3, 3)$, $C(0, 3x)$, $D(x, y)$
Find the Value of x and y

- 4 Prove that the points $A(3, -1)$, $B(-4, 6)$, $C(2, -2)$ lie on a circle whose centre is $M(-1, 2)$, then find the circumference of the circle in terms of π

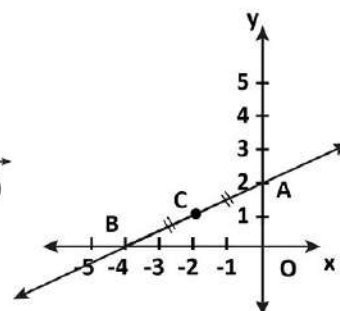


5 If the points $x(0, 1)$, $Y(a, 3)$, $Z(2, 5)$ are collinear, Find the value of a

6 In the opposite figure :
C is the midpoint of $\overline{AB}$, Find:

a The coordinates of point C

b The equation of $\overleftrightarrow{CO}$



7 Find the equation of straight line passing through the two points $(1, 2)$, $(-1, -2)$ then prove that it passes through the origin point.

8 If C is the midpoint of $\overline{AB}$, $A(2, 4)$, $B(6, 0)$,
Find the coordinates of the point C

9 Find the slope of the straight line: $3y - 2x - 6 = 0$ intercepted part from y-axis .



- 10 Find the slope of the straight line and the length of the intercepted part of y-axis where its equation is $4X + 5y - 10 = 0$

- 11 If ABCD is a parallelogram with vertices A (-4 , 2) , B (4 , -2) , C (9 , 1)
Find: Coordinates of the diagonals intersection. and Vertex of D

- 12 Prove that the points A(3 , -1) , B(-4 , 6) lies on the same circle whose center is M(-1 , 2), then find the circumference of the circle.

- 13 Find the equation of the axis of symmetry of $\overline{AB}$ where: A (1 , 3) , B (3 , 5)

- 14 Prove that: the points A (4 , 3) , B(1 , 1) , C(-5 , -3) are collinear.



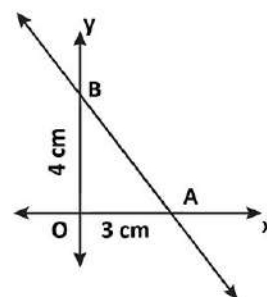
- 15 Prove that the points A (3 , 2), B (4 , -3), C (-1 , -2) and D (-2 , 3) are the vertices of the rhombus ABCD

- 16 Show the type of Δ ABC according to its sides if A (0, 0), B (3, 4) and C (-4, 3)

- 17 In the opposite figure:

$\overleftrightarrow{AB}$ is a straight line Find:

- The coordinates of the midpoint of $\overline{AB}$
- The equation of the straight line passing by origin point perpendicular to $\overleftrightarrow{AB}$



- 18 Find the equation of the straight line which passes through the point (1, 6) and the midpoint of $\overline{AB}$, where A(1, -2), B(3, -4)





19 Identify the type of the triangle whose vertices are A(-2 , 4), B (3 , -1), C(4 , 5) due to its sides lengths.

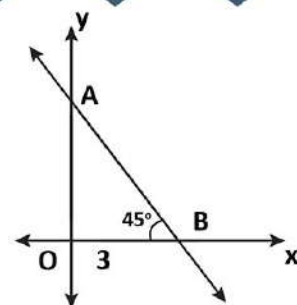
20 If C is the midpoint of AB where A(-3 , y) , B (9 , 11) and C (X , 3) ,Find: X , y

21 If the distance between the point (x , 5) and the point (6 , 1) equals $2\sqrt{5}$ length units. Find: The value of X

22 ABCD is a square where A (0 , 5) , B (3 , 2) , C (0 , -1) , Find the coordinates of D ?

23 Find the slope of the straight line which is perpendicular to the straight line passing through the two points (3 , -2) , (5 , 1)





- 23 In the opposite figure:
AB intercepts from the positive part of
x-axis 3 length units, $m(\angle ABO) = 45^\circ$
Find the equation of $\overleftrightarrow{AB}$.

- 24 If the straight line L_1 passes through the two points $(4, 3)$, $(2, k)$ and the
straight line L_2 makes with the positive direction of the X- axis a positive
angle of measure 45° , find the value of k if $L_1 \perp L_2$

- 25 Find the equation of the axis of symmetry of XY ,where X $(3, -2)$ and Y $(-5, 6)$

- 26 ABC is a triangle in which A $(1, 2)$, B $(5, -2)$ and C $(3, 4)$, D is the midpoint
of AB and $\overleftrightarrow{DE} \parallel \overleftrightarrow{BC}$ and intersects $\overleftrightarrow{AC}$ at E, Find:

- a The length of $\overleftrightarrow{DE}$ b The equation of $\overleftrightarrow{DE}$



- 27 Find the equation of the straight line which passes through the origin point parallel to the straight line that makes an angle of measure 60° with the positive direction of the X-axis

- 28 ABCD is a square in which: A(5 , 4) and C (-1 , 6), Find the equation of BD

- 29 If ABCD is a rhombus with vertices A (3 , 5) , B (12 , -3) , C (13 , 9)
Find: ☐ a Coordinates of the diagonals intersection.
☐ b The coordinates of point D

- 30 Find the equation of the straight line whose slope equals 2 and passes through the point (1 , 0)



31 A straight line with a slope of $\frac{1}{2}$ intersects a part of the positive direction of the y – axis with a length of 2 units. Find:

- The equation of the straight line with the x – axis.
- Its point of intersection with x-axis.

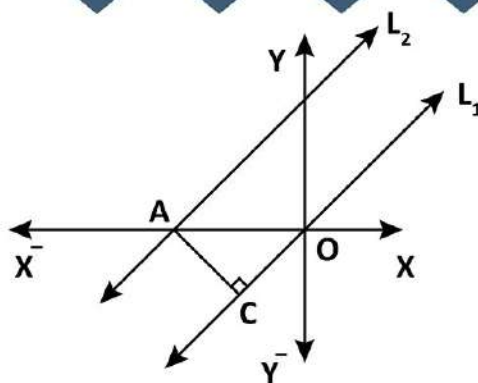
32 ABC is a triangle in which A (1 , -2), B (1 , 4) C(-1 , 6) and H is the midpoint of AB. N is the midpoint of $\overline{AC}$, so find the equation of $\overleftrightarrow{HN}$.

33 Find the equation of the axis of symmetry of $\overleftrightarrow{xy}$ where x (3 , -2) y(-5 , 6).

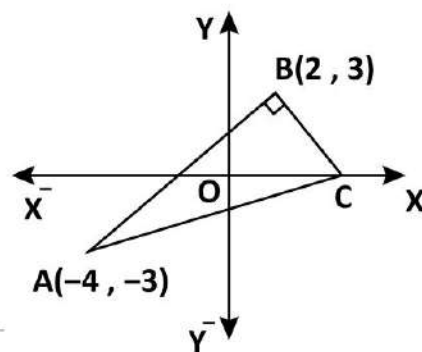
34 If the straight line L_1 passes through the points (4 , k + 5) and (2 , 3) and the straight line L_2 makes an angle of 135 with the positive direction of the x-axis, Find the value of k, if $L_1 \perp L_2$



- 35** In the opposite figure:
Equation of L_1 is $Y = X$
 $L_1 \parallel L_2$, $AC \perp L_1$
 $AC = 3\sqrt{2}$ length units.
Find equation of L_2



- 36** In the opposite figure:
 $A(-4, -3)$, $B(2, 3)$ and $\overline{AB} \perp \overline{BC}$
Find:
a) The coordinates of point C
b) The equation of $\overline{AC}$



- 37** If the straight line $AB \perp$ the x - axis where: $A(x, 5)$ and $B(4, -3)$, find the value of x

- 38** If the straight line $AB \perp$ the y - axis where: $A(3, 2)$ and $B(-6, y)$, find the value of y



Q1: Choose the correct answer

- 1) ABCD is a rhombus, then $\overline{AC}$ $\overline{BD}$
 - a) congruent
 - b) perpendicular
 - c) intersecting
 - d) equal
- 2) The two diagonals are equal in length and not perpendicular in the
 - a) parallelogram
 - b) rhombus
 - c) rectangle
 - d) square
- 3) The sum of the measures of the accumulative angles at a point =
 - a) 90°
 - b) 180°
 - c) 270°
 - d) 360°
- 4) The measure of each interior angle of the regular pentagon equals
 - a) 60°
 - b) 108°
 - c) 120°
 - d) 135°
- 5) The distance between the point $(-4, -3)$ and the x-axis equals length unit
 - a) -3
 - b) 3
 - c) 4
 - d) -4
- 6) The complementary angle for the angle measure 60° is an angle of measure
 - a) 120°
 - b) 0°
 - c) 30°
 - d) 90°
- 7) = 8 cm
 - a) $\overrightarrow{XY}$
 - b) $\overleftrightarrow{XY}$
 - c) $\overline{XY}$
 - d) XY
- 8) The number of axes of symmetry of half a circle equals
 - a) 0
 - b) 1
 - c) 2
 - d) infinite number
- 9) The length of the side opposite to the angle of measure 30° in the right-angled triangle equals the length of the hypotenuse
 - a) half
 - b) third
 - c) double
 - d) fourth





- 10** If ABCD is a parallelogram, Then $AB + DC = \dots\dots\dots$.
- (a) 2 AC (b) 2 BC (c) 2 AB (d) 2 BD
- 11** ABCD is a parallelogram, $m(\angle A) + m(\angle C) = 200^\circ$. Then $m(\angle B) = \dots\dots\dots$.
- (a) 50° (b) 80° (c) 100° (d) 120°
- 12** ABCD is a parallelogram, If $m(\angle A) = 80^\circ$, Then $m(\angle C) = \dots\dots\dots$.
- (a) 40° (b) 80° (c) 100° (d) 160°
- 13** The number of axes of symmetry of the isosceles triangle equals $\dots\dots\dots$.
- (a) 3 (b) 2 (c) 3 (d) 1
- 14** The sum of measures of exterior angles of a hexagon is $\dots\dots\dots$.
- (a) 360° (b) 540° (c) 720° (d) 120°
- 15** In ΔABC , $AB + BC - AC \dots\dots\dots$ Zero
- (a) $>$ (b) $=$ (c) $<$ (d) $\geq$
- 16** The concurrence point of medians of triangle divides each median in the ratio $\dots\dots\dots$: $\dots\dots\dots$ from vertex
- (a) 1 : 1 (b) 1 : 2 (c) 2 : 1 (d) 3 : 2
- 17** The measure of an interior angle in a regular hexagon equals $\dots\dots\dots$.
- (a) 540° (b) 120° (c) 108° (d) 135°
- 18** The parallelogram which has a right angle is called $\dots\dots\dots$.
- (a) square (b) rectangle (c) rhombus (d) trapezium
- 19** If the ratio between the measure of two supplementary angles is 4 : 5 then the measure of the greater angle equals $\dots\dots\dots$.
- (a) 40° (b) 80°
(c) 50° (d) 100°



Second Geometry

Q1: Choose the correct answer

1 If $\sin 70^\circ = \cos X$ where X is the measure of an acute angle, then $X = \dots\dots\dots$

☐ a 60°

☐ b 45°

☐ c 10°

☒ d 20°

2 In ΔABC , If $m(\angle B) = 90^\circ$, then $\sin A + \cos C = \dots\dots\dots$

☒ a $2 \sin A$

☐ b $2 \sin C$

☐ c $2 \sin B$

☐ d $2 \cos A$

3 In ΔABC , If $m(\angle A) = 85^\circ$ and $\sin B = \cos B$, then $m(\angle C) = \dots\dots$

☐ a 30°

☐ b 45°

☒ c 50°

☐ d 60°

4 For any two acute angles A and B , if $\sin A = \cos B$, then $m(\angle A) + m(\angle B) = \dots\dots\dots$

☐ a 30°

☐ b 180°

☒ c 90°

☐ d 60°

5 ΔABC is a right-angled triangle at A , then cosine angle B : sine angle C equals $\dots\dots\dots$

☐ a $\frac{4}{3}$

☐ b $\frac{5}{3}$

☐ c $\frac{3}{4}$

☒ d 1

6 The angle whose measure is 50° supplements an angle of measure $\dots\dots\dots$

☐ a 40°

☐ b 90°

☒ c 130°

☐ d 180°

7 ABC is a right-angled triangle at B where $3 AC = 5 BC$, then $\tan A = \dots\dots\dots$

☐ a $\frac{4}{3}$

☐ b $\frac{5}{3}$

☒ c $\frac{3}{4}$

☐ d $\frac{3}{5}$

8 $\sin 30^\circ + \cos 60^\circ = \dots\dots\dots$

☐ a $\frac{1}{4}$

☐ b 0

☒ c 1

☐ d $\frac{\sqrt{3}}{2}$



9 If X is the measure of an acute angle, $2 \sin X - 0 = 1$, then $X = \dots\dots\dots$

(a) 60°

(b) 45°

(c) 90°

(d) 30°

10 If $\cos(X + 10^\circ) = \frac{1}{2}$ where $(X + 10^\circ)$ is the measure of an acute angle, then $X = \dots\dots\dots$

(a) 50°

(b) 70°

(c) 40°

(d) 30°

11 If X and y are complementary angles where $X : y = 1 : 2$, then $\sin X + \cos y = \dots\dots\dots$

(a) $\frac{1}{4}$

(b) $\frac{1}{2}$

(c) 1

(d) $\frac{\sqrt{3}}{2}$

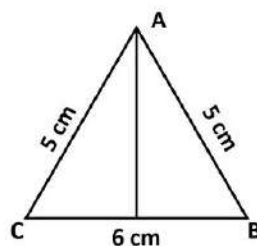
12 In the opposite figure:
 $\cos B = \dots\dots\dots$

(a) $\frac{4}{5}$

(b) $\frac{3}{5}$

(c) $\frac{5}{6}$

(d) $\frac{5}{4}$



13 In ΔABC , If $m(\angle A) : m(\angle B) : m(\angle C) = 5 : 4 : 3$, Then $\cos B = \dots\dots\dots$

(a) Zero

(b) $\frac{1}{2}$

(c) 1

(d) $\frac{\sqrt{3}}{2}$

14 If The straight line: $y = X \sin 30^\circ + c$ passes through the point $(4, 6)$, then $c = \dots\dots\dots$

(a) 4

(b) 6

(c) 8

(d) 2

15 The tangent of an acute angle of the right isosceles triangle is equal to $\dots\dots\dots$

(a) $\sqrt{3}$

(b) $\frac{1}{\sqrt{3}}$

(c) 1

(d) $\frac{\sqrt{2}}{2}$

16 If $2 \sin X = \tan X$ where X is an acute angle, then $m(\angle X) = \dots\dots\dots$

(a) 60°

(b) 45°

(c) 15°

(d) 30°

17 If $\tan X = \frac{1}{\sqrt{3}}$ where X is the measure of an acute angle, then $\sin 2X = \dots\dots\dots$

(a) $2\sqrt{3}$

(b) $\frac{2}{\sqrt{3}}$

(c) $\frac{\sqrt{3}}{2}$

(d) 3



18) ΔABC is right-angled at A, if $\tan B = 1$, then $\tan C - \sin C \cos C = \dots\dots\dots$

(a) Zero

(b) 1

(c) 2

(d) $\frac{1}{2}$

19) In the opposite figure:

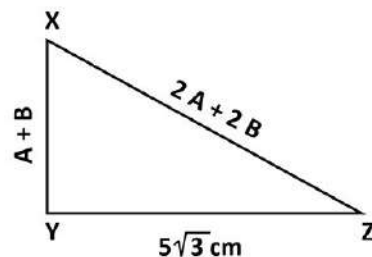
Perimeter of triangle XYZ = cm

(a) $15 + \sqrt{3}$

(b) $15 + 5\sqrt{3}$

(c) $15 - \sqrt{3}$

(d) $3 + \sqrt{15}$



20) If $\cos (X + 10^\circ) = \frac{1}{2}$ where $(X + 10^\circ)$ is the measure of an acute angle, then $x = \dots\dots$

(a) 30°

(b) 40°

(c) 50°

(d) 70°

21) If $\sin 2X = \frac{1}{2}$ where $2X$ is the measure of an acute angle, then $\tan 3X = \dots\dots$

(a) $\sqrt{3}$

(b) $\frac{1}{\sqrt{3}}$

(c) 1

(d) $\frac{1}{2}$

22) If the point $(3, b - 5)$ lies on the x-axis, then $2b + 1 = \dots\dots\dots$

(a) Zero

(b) 5

(c) 11

(d) 8

23) If the point $(x - 2, 3 - x)$ lies in the fourth quadrant, then one of the possible values of x is

(a) 3

(b) 2

(c) 4

(d) 1

24) If $\sin x = \frac{\sqrt{3}}{2}$, where x is a positive acute angle, then $16\cos^2 x = \dots\dots\dots$

(a) 1

(b) 2

(c) 4

(d) 8

25) If $\tan x = \frac{1}{\sqrt{3}}$, where x is a positive acute angle, then $8\cos 2x = \dots\dots\dots$

(a) 1

(b) 2

(c) 4

(d) 8



26 If $\tan 2a = \sqrt{3}$ when $(2a)$ is a positive acute angle, then $a = \dots\dots\dots$

a 30°

b 45°

c 60°

d 90°

27 If $\sin 2X = \frac{1}{2}$ where $2X$ is the measure of an acute angle, then $\tan 3X = \dots\dots\dots$

a $\sqrt{3}$

b $\frac{1}{\sqrt{3}}$

c 1

d $\frac{1}{2}$

28 If X is the measure of an acute angle, $2 \sin X - 1 = 0$, then $X = \dots\dots\dots$

a 60°

b 45°

c 90°

d 30°

29 If $\cos a \tan 30^\circ = \cos^2 45^\circ$, when a is a positive acute angle, then $a = \dots\dots\dots$

a 60°

b 45°

c 90°

d 30°

30 If ΔABC , is right-angled at B , its area $= \frac{1}{2} (AB)^2$, then $\tan C = \dots\dots\dots$

a $\sqrt{3}$

b $\frac{1}{\sqrt{3}}$

c 1

d $\frac{\sqrt{3}}{2}$

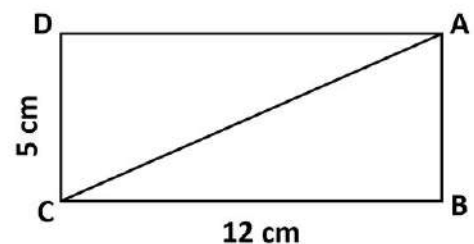
Q2: Answer The Following

1 In the opposite figure:

ABCD is a rectangle, $AB = 5$ cm, $BC = 12$ cm

Find: a The length of AC

b The value of: $5 \tan(\angle ACD) - 13 \sin(\angle DAC)$



The length of AC is 13 cm.

The value of the expression is 7.



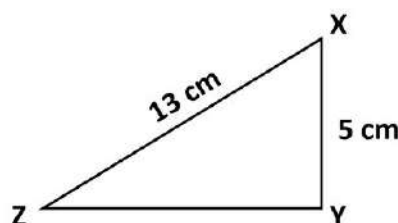
- 2 ABCD is an isosceles trapezoid in which : $\overline{AD} \parallel \overline{BC}$, $AD = 4$ cm, $AB = 5$ cm and $BC = 12$ cm

Prove that: $\frac{5 \tan B \cos C}{\sin^2 C + \cos^2 B} = 3$

- 3 Without using the calculator , prove that : $\cos 60^\circ + 2 \sin^2 45^\circ = \sin 30^\circ + 3 \tan^2 30^\circ$

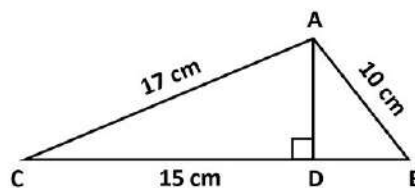
Both sides equal $\frac{3}{2}$

- 4 In the opposite figure:
XYZ is a right angle, $m(\angle Y) 90^\circ$
 $XY = 5$ cm, $XZ = 13$ cm.
Find $\sin X \cos Z + \cos X \sin Z$



The value is 1

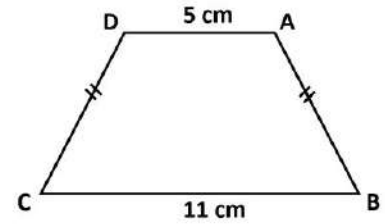
- 5 In the opposite figure:
 $AD \perp BC$, $AC = 17$ cm, $DC = 15$ cm, $AB = 10$.
Find the value of:
 $3 \tan(\angle C) + \sin(\angle B)$



The value is $\frac{12}{5}$



- 6 ABCD is an isosceles trapezium in which :
AB = AD = DC = 5 cm, BC = 11 cm, Find:



- a) $m(\angle B)$, $m(\angle A)$ b) Area of trapezium ABCD

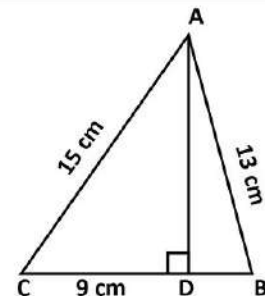
53.13° 126.87°

32 cm²

- 7 If $\sin X = \tan 30^\circ \sin 60^\circ$ where X is the measure of an acute angle
Find without using the calculator the value of : $4 \cos X \sin X$

$\sqrt{3}$

- 8 In the opposite figure:
 $AB \perp BC$, AB = 13cm, AC = 15 cm, CD = 9
Find in the simplest form the value of
$$\frac{\tan(\angle CAD) - \tan(\angle BAD)}{\tan(\angle CAD) + \tan(\angle BAD)}$$



$\frac{2}{7}$

- 9 A ladder of length 6 m, its upper end A is on a vertical wall and its lower end B is on a horizontal ground, if C is the projection of the point A on the ground and the ladder inclines by an angle of measure 60° on the ground, Find the length of AC

$3\sqrt{3} \approx 5.2$ meters



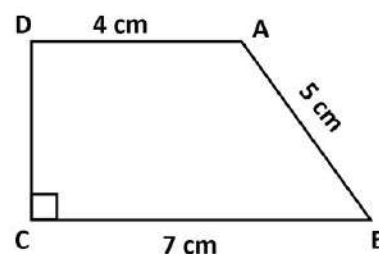
- 10 Without using calculator find the value of h (where h is an acute angle)
If : $\tan (h - 5)^\circ = \sin 30^\circ \cos 60^\circ + \cos^2 30^\circ$

$$h = 50$$

- 11 ABCD is a rectangle whose diagonal length $AC = 24$ cm, $m(\angle ACB) = 25^\circ$,
Find the length of BC

$$BC = 21.75 \text{ cm}$$

- 12 In the opposite figure:
ABCD is a right-angled trapezium at C,
 $AD \parallel BC$, $AB = 5$ cm, $BC = 7$ cm, $AD = 4$ cm
Find: a) $\sin B$ b) Surface area of trapezium ABCD
(note: draw $AH \perp BC$ to cut it a H).



$$\frac{4}{5}$$

$$22 \text{ cm}^2$$

- 13 ABC is a right-angled triangle at C, $AB = 5$ cm, $BC = 3$ cm, Find:
a) The length of AC b) $\sin A$, $\sin B$, $\tan A$ $\tan B$

$$\frac{3}{5} \quad \frac{4}{5} \quad 1$$

$$AC = 4 \text{ cm}$$



- 14 XYZ is a right-angled triangle at Y, XY = 3 cm, XZ = 5 cm. Prove that:
 $\cos X \cos Z = \sin X \sin Z$

Both sides equals $\frac{12}{25}$

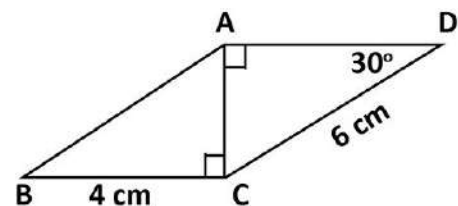
- 15 If $\frac{1}{2} \cos x = \sin^2 60^\circ + \cos 60^\circ - \tan 45^\circ$, Find the value of x
 (where x is a positive acute angle)

$x = 60^\circ$

- 16 If $2\sin x = \sin 30^\circ \cos 60^\circ + \cos 30^\circ \sin 60^\circ$, find the value of x where x is an acute angle.

$x = 30^\circ$

- 17 In the opposite figure:
 $m(\angle D) = 30^\circ$, $m(\angle CAD) = m(\angle ACB) = 90^\circ$
 , BC = 4 cm, CD = 6 cm.
 Find: $\tan B$



$\frac{3}{4}$

- 18 If $\cos x \tan 30^\circ = \cos^2 45^\circ$, find the value of x where x is an acute angle.

$x = 30^\circ$



Follow for More!

Q1: Choose the correct answer

1 If the two straight lines : $X + y = 5$, $kX + 2y = 0$ are parallel: then $k = \dots\dots\dots$

a -2

b -1

c 1

d 2

2 The slope of the straight line parallel to x-axis is

a -1

b 0

c 1

d undefined

3 If the X-axis bisects AB such that A (3 , 2) and B (-2 , y), then y =

a 3

b 2

c -2

d 4

4 A circle has a surface area of $4\pi \text{ cm}^2$, then its radius length is cm.

a 4

b 2

c 4π d 2π

5 The distance between the two points (3 , 0) and (0 , -4) equals length units

a 4

b 5

c 6

d 7

6 If m_1 , m_2 are the slopes of two parallel straight lines , then

a $m_1 - m_2 = 0$ b $m_1 + m_2 = 0$ c $m_1 m_2 = 0$ d $m_1 - m_2 \neq 0$

7 If the straight line $y = kx + 1$ is parallel to the straight line $2y - X = 5$, then $k = \dots\dots\dots$

a 1

b 2

c -2

d $\frac{1}{2}$

8 The distance between the point $(\sqrt{3} , 1)$ and the origin point is Length unit

a 4

b 3

c $\sqrt{10}$

d 2



9 The equation of the straight line which passes through the point (3 , -5) and parallel to y-axis is

☒ a $x = 3$

☐ b $y = 2$

☐ c $y = -5$

☐ d $x = -5$

10 If the two straight lines whose slopes are $-\frac{4}{3}$ and $\frac{k}{2}$ are parallel, then $k = \dots$

☐ a $-\frac{4}{8}$

☐ b $\frac{1}{3}$

☒ c $-\frac{8}{3}$

☐ d $\frac{8}{3}$

11 If $AB \perp CD$, and the slope of $AB = \frac{1}{5}$, then the slope of $CD = \dots$

☒ a -5

☐ b $-\frac{1}{5}$

☐ c 5

☐ d $\frac{1}{5}$

12 The length of the line segment which is drawn between the points (0 , 0) and (5 , 12) =

☐ a 5

☐ b 7

☐ c 12

☒ d 13

13 ABCD is a rhombus where $A(5 , 3)$, $C(-2 , -4)$, then the slope of $BD = \dots$

☐ a $-\frac{1}{7}$

☐ b $\frac{1}{7}$

☒ c -1

☐ d 1

14 A circle of centre at the origin point and its radius length is 2 length units ,which of the following points belongs to the circle ?

☐ a $(1 , -2)$

☒ b $(\sqrt{3} , 1)$

☐ c $(-2 , \sqrt{5})$

☐ d $(0 , 1)$

15 The perpendicular distance between the two straightlines: $X + 2 = 0$, $X - 4 = 0$ equals unit length.

☐ a 5

☐ b 4

☒ c 6

☐ d 2

16 Distance between point (2 , -3) and y-axis = unit length.

☒ a 2

☐ b -3

☐ c $\sqrt{13}$

☐ d $\sqrt{5}$



17 The slope of the straight line whose equation : $x - y + 3 = 0$ is

(a) 3

(b) -1

(c) 1

(d) -3

18 The equation of the straight line which passes through $(3, -4)$ and parallel to y-axis is

(a) $x = 3$

(b) $y = 3$

(c) $y = -4$

(d) $x = -4$

19 The distance between the two straight lines: $y + 1 = 0$, $y + 3 = 0$ is unit lengths.

(a) 4

(b) 2

(c) 1

(d) 5

20 The straight line whose equation is : $2X + 5y - 10 = 0$ cuts from the positive part of x-axis a part of length equals length units

(a) $\frac{2}{5}$

(b) 2

(c) $\frac{5}{3}$

(d) 5

21 The straight line whose equation: $2y = 3x + 6$ cuts from the positive direction of y-axis a part of length length units.

(a) $\frac{3}{2}$

(b) 2

(c) 3

(d) 6

22 The equation of the straight line which passes through the point $(-2, -3)$ and parallel to x-axis is

(a) $x = -3$

(b) $y = -3$

(c) $y = -2$

(d) $x = -2$

23 If the two straight lines: $y = ax + b$, $y = cx + d$, are perpendicular, then $\times$ = -1

(a) $a \times d$

(b) $b \times c$

(c) $a \times c$

(d) $b \times d$



24 If the two straight lines: $3X - 4y - 3 = 0$, $ky + 4X - 8 = 0$ are perpendicular, then $k = \dots$

(a) -3

(b) -4

(c) 4

(d) 3

25 The straight line whose equation is : $3X - 3y + 5 = 0$ makes a positive angle with the positive direction of x-axis , its measure =

(a) 30°

(b) 45°

(c) 60°

(d) 90°

26 The perpendicular distance between the two straight lines $x - 2 = 0$ and $x + 3 = 0$ equals length units.

(a) 1

(b) 5

(c) 3

(d) 2

27 The distance between the point $(5, \tan^2 60^\circ)$ and the x-axis is length unit

(a) 5

(b) 3

(c) $\sqrt{3}$

(d) $\sqrt{5}$

28 If the straight line whose equation is $kx + \sqrt{3}y = 4$ makes an angle of measure 60° with the positive direction of X-axis, then $k = \dots\dots\dots$

(a) 3

(b) -3

(c) $-\sqrt{3}$

(d) $\sqrt{3}$

29 The equation of the y-axis is

(a) $X = 0$

(b) $Y = X$

(c) $Y = 0$

(d) $Y = -X$

30 If $\frac{2}{3}, \frac{k}{2}$ are the slopes of two parallel straight lines, then $k = \dots\dots\dots$

(a) $-\frac{4}{3}$

(b) $-\frac{3}{4}$

(c) $\frac{4}{3}$

(d) 3

31 If AB is a diameter of a circle where $A(-1, 4)$, $B(-3, -2)$, then the area of the circle equals π square units.

(a) 10

(b) $2\sqrt{10}$

(c) 20

(d) 80



32 If the two straight lines $y = mx + e$, $y = nx + o$ are parallel, (where m, e, n, o are real numbers), then $m - n = \dots\dots\dots$.

(a) -2

(b) -1

(c) 1

(d) zero

33 The equation of a straight line is: $\frac{x}{2} - \frac{y}{3} = 6$, then it intercepts from the positive part of x-axis a part of length $\dots\dots\dots$ length units.

(a) 3

(b) 12

(c) 6

(d) 18

34 If the two straight lines: $3x - 4y - 3 = 0$, $ky = 1 - 8x$ are perpendicular , then $k = \dots\dots\dots$.

(a) -6

(b) -3

(c) 3

(d) 6

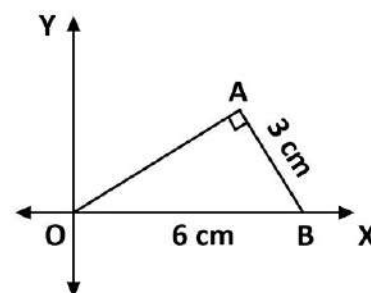
35 In the opposite figure:
The equation of OA is $y = \dots\dots\dots$.

(a) $\frac{1}{2} x$

(b) $\frac{1}{3} x$

(c) $\frac{1}{\sqrt{3}} x$

(d) $\sqrt{3} x$



36 If AB is the diameter of the circle where $A(4, -7)$, $B(-2, 1)$, then the center of the circle is $\dots\dots\dots$.

(a) (1, -3)

(b) (1, 3)

(c) (2, -6)

(d) (0, 4)

37 If $M(1, 2)$ is the intersection point of the diagonals of the parallelogram ABCD, where $A(2, 5)$, then $C = \dots\dots\dots$.

(a) (0, 2)

(b) (-4, 1)

(c) (0, -1)

(d) (-1, 0)

38 If ABCD is a square, where $A(3, 5)$ and $C(5, -1)$, then the slope of BD is $\dots\dots\dots$.

(a) -6

(b) $\frac{1}{3}$

(c) -3

(d) $-\frac{1}{3}$



- 39 If the slope of the straight line = -1 , then the angle it makes with the positive direction of the x-axis is
- ☐ a Zero ☐ b Acute ☐ c Right ☒ d Obtuse
- 50 If the slope of the straight line is not defined, then the angle it makes with the positive direction of the x-axis is
- ☐ a Zero ☐ b Acute ☒ c Right ☐ d Obtuse
- 41 If the line AB is parallel to the x-axis where $A(4, 2)$ and $B(-5, y)$, then $y = \dots\dots\dots$
- ☒ a 2 ☐ b 0 ☐ c -2 ☐ d 4
- 42 If the origin is the midpoint of AB where $A(5, -2)$, then point B is
- ☐ a $(2, 5)$ ☐ b $(-2, -5)$ ☐ c $(5, -2)$ ☒ d $(-5, 2)$
- 43 If $\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$ and the slope of $AB = 0.5$, then the slope of $CD = \dots\dots\dots$
- ☐ a -0.5 ☐ b 2 ☒ c -2 ☐ d 0.5
- 44 The lines $y = 3x - 5$ and $2y = 5x + 72$ are straight lines.
- ☐ a Perpendicular ☐ b Parallel ☒ d Intersecting and not perpendicular
☐ c Coincident
- 45 The straight line whose equation is $9x - 3y - 6 = 0$, its slope =
- ☐ a -3 ☒ b 3 ☐ c -6 ☐ d 4
- 46 ABCD is a rhombus where $A(7, 1)$, $B(1, 9)$, then the perimeter = unit length
- ☐ a 10 ☐ b 14 ☐ c 100 ☒ d 40



Q2: Answer The Following

- 1 ABCD is a quadrilateral where, $A(-3, -2)$, $B(2, -2)$, $C(4, 2)$ and $D(-2, 2)$
Is it a parallelogram or not?

ABCD is not a parallelogram

- 2 Prove that the straight line which passes through the two points $(-1, 3)$, $(1, 4)$ is parallel to the straight line whose equation is $2y - x = 1$

Both slopes equals: $\frac{1}{2}$

- 3 ABCD is a rectangle in which $A(1, 1)$, $B(3, 3)$, $C(0, 3x)$, $D(x, y)$
Find the Value of x and y

$x = -2$

$y = -8$

- 4 Prove that the points $A(3, -1)$, $B(-4, 6)$, $C(2, -2)$ lie on a circle whose centre is $M(-1, 2)$, then find the circumference of the circle in terms of π

$C = 10\pi$



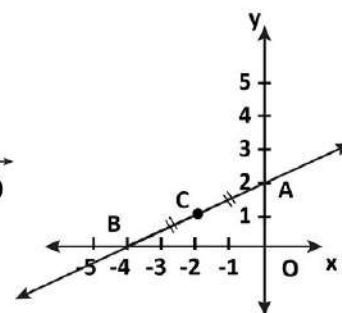
5 If the points $x(0, 1)$, $Y(a, 3)$, $Z(2, 5)$ are collinear, Find the value of a

$$a = 1$$

6 In the opposite figure :
C is the midpoint of $\overline{AB}$, Find:

a The coordinates of point C

b The equation of $\overleftrightarrow{CO}$



$$C(-2, 1)$$

$$y = -\frac{1}{2}x$$

7 Find the equation of straight line passing through the two points $(1, 2)$, $(-1, -2)$ then prove that it passes through the origin point.

$$y = 2x$$

8 If C is the midpoint of $\overline{AB}$, $A(2, 4)$, $B(6, 0)$,
Find the coordinates of the point C

$$(4, 2)$$

9 Find the slope of the straight line: $3y - 2x - 6 = 0$ intercepted part from y-axis .

$$\text{Slope} = \frac{2}{3}$$

2 length unit



- 10 Find the slope of the straight line and the length of the intercepted part of y-axis where its equation is $4X + 5y - 10 = 0$

$$\text{Slope} = \frac{-4}{5}$$

2 length unit

- 11 If ABCD is a parallelogram with vertices A (-4 , 2) , B (4 , -2) , C (9 , 1)
Find: Coordinates of the diagonals intersection. and Vertex of D

$$\text{Intersecting at } \left(\frac{5}{2}, \frac{3}{2} \right)$$

$$D (1 , 5)$$

- 12 Prove that the points A(3 , -1) , B(-4 , 6) lies on the same circle whose center is M(-1 , 2), then find the circumference of the circle.

$$C = 10\pi$$

- 13 Find the equation of the axis of symmetry of $\overline{AB}$ where: A (1 , 3) , B (3 , 5)

$$y = -x + 6$$

- 14 Prove that: the points A (4 , 3) , B(1 , 1) , C(-5 , -3) are collinear.

$$\text{All slopes} = \frac{2}{3}$$



- 15 Prove that the points A (3 , 2), B (4 , -3), C (-1 , -2) and D (-2 , 3) are the vertices of the rhombus ABCD

All sides equals $\sqrt{26}$

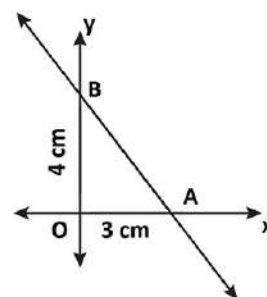
- 16 Show the type of Δ ABC according to its sides if A (0, 0), B (3, 4) and C (-4, 3)

Two sides equals 5 unit length

- 17 In the opposite figure:

$\overleftrightarrow{AB}$ is a straight line Find:

- The coordinates of the midpoint of $\overline{AB}$
- The equation of the straight line passing by origin point perpendicular to $\overleftrightarrow{AB}$



Midpoint = $(\frac{3}{2}, 2)$

$$y = \frac{3}{4}x$$

- 18 Find the equation of the straight line which passes through the point (1, 6) and the midpoint of $\overline{AB}$, where A(1, -2), B(3, -4)

midpoint = (2, -3)

$$y = -9x + 15$$





19 Identify the type of the triangle whose vertices are A(-2 , 4), B (3 , -1), C(4 , 5) due to its sides lengths.

Two sides equals = $\sqrt{37}$

20 If C is the midpoint of AB where A(-3 , y) , B (9 , 11) and C (X , 3) ,Find: X , y

x = 3 y = -5

21 If the distance between the point (x , 5) and the point (6 , 1) equals $2\sqrt{5}$ length units. Find: The value of X

x = 8 or x = 4

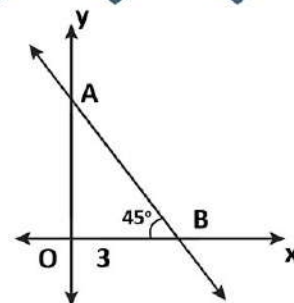
22 ABCD is a square where A (0 , 5) , B (3 , 2) , C (0 , -1) , Find the coordinates of D ?

D(-3 , 2)

23 Find the slope of the straight line which is perpendicular to the straight line passing through the two points (3 , -2) , (5 , 1)

slope = $-\frac{2}{3}$





- 23 In the opposite figure:
AB intercepts from the positive part of x-axis 3 length units, $m(\angle ABO) = 45^\circ$
Find the equation of $\overleftrightarrow{AB}$.

$$y = -x + 3$$

- 24 If the straight line L_1 passes through the two points $(4, 3)$, $(2, k)$ and the straight line L_2 makes with the positive direction of the X-axis a positive angle of measure 45° , find the value of k if $L_1 \perp L_2$

$$k = 5$$

- 25 Find the equation of the axis of symmetry of XY, where $X(3, -2)$ and $Y(-5, 6)$

$$y = x + 3$$

- 26 ABC is a triangle in which $A(1, 2)$, $B(5, -2)$ and $C(3, 4)$, D is the midpoint of AB and $\overleftrightarrow{DE} \parallel \overleftrightarrow{BC}$ and intersects $\overleftrightarrow{AC}$ at E, Find:

a) The length of $\overleftrightarrow{DE}$

b) The equation of $\overleftrightarrow{DE}$

$$D = \sqrt{10} \text{ length unit}$$

$$y = -3x + 9$$



- 27 Find the equation of the straight line which passes through the origin point parallel to the straight line that makes an angle of measure 60° with the positive direction of the X-axis

$$y = \sqrt{3} x$$

- 28 ABCD is a square in which: A(5 , 4) and C (-1 , 6), Find the equation of BD

$$y = 3x - 1$$

- 29 If ABCD is a rhombus with vertices A (3 , 5) , B (12 , -3) , C (13 , 9)
Find: ☐ a Coordinates of the diagonals intersection.
☐ b The coordinates of point D

intersecting at (8 , 7)

D (4 , 17)

- 30 Find the equation of the straight line whose slope equals 2 and passes through the point (1 , 0)

$$y = 2x - 2$$



31 A straight line with a slope of $\frac{1}{2}$ intersects a part of the positive direction of the y – axis with a length of 2 units. Find:

- a The equation of the straight line with the x – axis.
b Its point of intersection with x-axis.

$$y = \frac{1}{2}x + 2$$

$$(-4, 0)$$

32 ABC is a triangle in which A (1, -2), B (1, 4) C(-1, 6) and H is the midpoint of AB. N is the midpoint of AC, so find the equation of $\overleftrightarrow{HN}$.

$$y = -x + 2$$

33 Find the equation of the axis of symmetry of $\overleftrightarrow{xy}$ where x (3, -2) y(-5, 6).

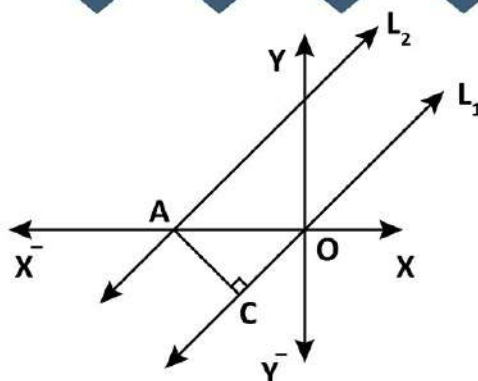
$$y = x + 3$$

34 If the straight line L_1 passes through the points (4, k + 5) and (2, 3) and the straight line L_2 makes an angle of 135 with the positive direction of the x-axis, Find the value of k, if $L_1 \perp L_2$

$$k = 0$$

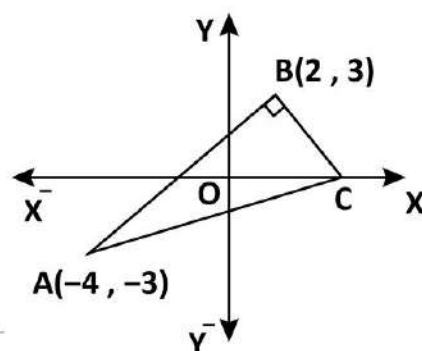


- 35 In the opposite figure:
Equation of L_1 is $Y = X$
 $L_1 \parallel L_2$, $AC \perp L_1$
 $AC = 3\sqrt{2}$ length units.
Find equation of L_2



$$y = x + 6$$

- 36 In the opposite figure:
 $A(-4, -3)$, $B(2, 3)$ and $\overline{AB} \perp \overline{BC}$
Find:
a) The coordinates of point C
b) The equation of $\overleftrightarrow{AC}$



$$C(5, 0)$$

$$y = \frac{1}{3}x - \frac{5}{3}$$

- 37 If the straight line $AB \perp$ the x - axis where: $A(x, 5)$ and $B(4, -3)$, find the value of x

$$x = 4$$

- 38 If the straight line $AB \perp$ the y - axis where: $A(3, 2)$ and $B(-6, y)$, find the value of y

$$y = 2$$



Q1: Choose the correct answer

- 1) ABCD is a rhombus, then $\overline{AC}$ $\overline{BD}$

☐ a) congruent ☒ b) perpendicular ☐ c) intersecting ☐ d) equal
- 2) The two diagonals are equal in length and not perpendicular in the

☐ a) parallelogram ☐ b) rhombus ☒ c) rectangle ☐ d) square
- 3) The sum of the measures of the accumulative angles at a point =

☐ a) 90° ☐ b) 180° ☐ c) 270° ☒ d) 360°
- 4) The measure of each interior angle of the regular pentagon equals

☐ a) 60° ☒ b) 108° ☐ c) 120° ☐ d) 135°
- 5) The distance between the point $(-4, -3)$ and the x-axis equals length unit

☐ a) -3 ☒ b) 3 ☐ c) 4 ☐ d) -4
- 6) The complementary angle for the angle measure 60° is an angle of measure

☐ a) 120° ☐ b) 0° ☒ c) 30° ☐ d) 90°
- 7) = 8 cm

☐ a) $\overrightarrow{XY}$ ☐ b) $\overleftrightarrow{XY}$ ☐ c) $\overline{XY}$ ☒ d) XY
- 8) The number of axes of symmetry of half a circle equals

☐ a) 0 ☒ b) 1 ☐ c) 2 ☐ d) infinite number
- 9) The length of the side opposite to the angle of measure 30° in the right-angled triangle equals the length of the hypotenuse

☒ a) half ☐ b) third
☐ c) double ☐ d) fourth





- 10** If ABCD is a parallelogram, Then $AB + DC = \dots\dots\dots$.
 (a) 2 AC (b) 2 BC (c) 2 AB (d) 2 BD
- 11** ABCD is a parallelogram, $m(\angle A) + m(\angle C) = 200^\circ$. Then $m(\angle B) = \dots\dots\dots$.
 (a) 50° (b) 80° (c) 100° (d) 120°
- 12** ABCD is a parallelogram, If $m(\angle A) = 80^\circ$, Then $m(\angle C) = \dots\dots\dots$.
 (a) 40° (b) 80° (c) 100° (d) 160°
- 13** The number of axes of symmetry of the isosceles triangle equals $\dots\dots\dots$.
 (a) 3 (b) 2 (c) 3 (d) 1
- 14** The sum of measures of exterior angles of a hexagon is $\dots\dots\dots$.
 (a) 360° (b) 540° (c) 720° (d) 120°
- 15** In ΔABC , $AB + BC - AC \dots\dots\dots$ Zero
 (a) $>$ (b) $=$ (c) $<$ (d) $\geq$
- 16** The concurrence point of medians of triangle divides each median in the ratio $\dots\dots\dots$: $\dots\dots\dots$ from vertex
 (a) 1 : 1 (b) 1 : 2 (c) 2 : 1 (d) 3 : 2
- 17** The measure of an interior angle in a regular hexagon equals $\dots\dots\dots$.
 (a) 540° (b) 120° (c) 108° (d) 135°
- 18** The parallelogram which has a right angle is called $\dots\dots\dots$.
 (a) square (b) rectangle (c) rhombus (d) trapezium
- 19** If the ratio between the measure of two supplementary angles is 4 : 5 then the measure of the greater angle equals $\dots\dots\dots$.
 (a) 40° (b) 80°
 (c) 50° (d) 100°



كيفية طباعة صفحات معينة من ملف معين

مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



خطوة 1



خطوة 2
اختيار اسم
الطابعة
بتاعتك

خطوة 3
كتابة الصفحات
المراد طباعتها
نكتب رقم 4 ثم
نكتب الشرطة
دي - ثم نكتب 9

خطوة 4
اختيار نوع الورق



خطوة 5
اختيار A4



خطوة 6

حمل الآن

مجاناً وحصرياً

المراجعة رقم (2)

الترم الاول



FIRST: ALGEBRA

Choose the correct answer:

- (1) If $(a+5, 3) = (8, b-1)$ then $\sqrt{a^2 + b^2} = \dots\dots\dots$
 (a) 7 (b) 3 (c) 9 (d) 5
- (2) If $(X^5, Y+1) = (32, \sqrt[3]{27})$, then $X - Y = \dots\dots\dots$
 (a) 0 (b) 4 (c) 2 (d) 5
- (3) If $n(X^2) = 9$, then $n(X) = \dots\dots\dots$
 (a) 3 (b) ± 3 (c) 9 (d) ± 9
- (4) If $n(Y) = 3$ and $n(X \times Y) = 12$, then $n(X^2) = \dots\dots\dots$
 (a) 4 (b) 16 (c) 9 (d) 2
- (5) If $n(X^2) = 9$ and $n(X \times Y) = 6$, then $n(Y^2) = \dots\dots\dots$
 (a) 3 (b) 2 (c) 4 (d) 8
- (6) If $X = \{2\}$ and $Y = \{3\}$, then $X \times Y = \dots\dots\dots$
 (a) 6 (b) $\{6\}$ (c) $(2, 3)$ (d) $\{(2, 3)\}$
- (7) If $X = \{5\}$, then $n(X^2) = \dots\dots\dots$
 (a) 1 (b) 25 (c) 10 (d) 5
- (8) If $X = \{1, 2\}$ and $Y = \{3, 4\}$, then $(3, 4) \in \dots\dots\dots$
 (a) $X \times Y$ (b) $Y \times X$ (c) X^2 (d) Y^2
- (9) If $n(X) = 2$ and $Y = \{1, 2\}$, then $n(X \times Y) = \dots\dots\dots$
 (a) 4 (b) 3 (c) 5 (d) 6

- (10) For any two sets A and B, then the set $\{(x,y): x \in A, y \in B\}$ refers to
- a $n(A \times B)$ b $A \times B$ c $n(B \times A)$ d $B \times A$
- (11) If $X = \{3,4\}$, then $n(X \times \emptyset) = \dots\dots\dots$
- a 0 b 1 c 2 d $\emptyset$
- (12) If $n(X) = k-2$, $n(Y) = k+2$ and $n(X \times Y) = 5$, then $k = \dots\dots\dots$
- a 3 b -3 c ± 3 d 0
- (13) If $\{2\} \times \{x,y\} = \{(2,4), (2,3)\}$, then $x-y = \dots\dots\dots$
- a 1 b -1 c ± 1 d 0
- (14) If the point $(a,5) \in Y\text{-axis}$, then $a = \dots\dots\dots$
- a 0 b 5 c -5 d 25
- (15) If the point $(5,b-7) \in X\text{-axis}$, then $b = \dots\dots\dots$
- a 2 b 5 c 7 d 12
- (16) If $b < 3$, then the point $(5,b-3)$ lies in the quadrant.
- a first b second c third d fourth
- (17) If (a,b) lies in the third quadrant, then a b zero
- a = b < c > d $\leq$
- (18) If $(|x|,4) = (3,y^2)$ and (x,y) lies in 2nd quadrant, then $x+y = \dots\dots\dots$
- a 7 b 1 c -1 d -7
- (19) If $(x-2,x-4)$ lies in 4th quadrant, then $x = \dots\dots\dots$
- a 0 b 2 c 3 d 4
- (20) If (k^2-4,k) lies on the negative direction of Y-axis, then $k = \dots\dots\dots$
- a 2 b ± 2 c -2 d 0

(21) If $X \times Y = \{(1,2), (1,3), (1,4)\}$, then $n(X^2) = \dots\dots\dots$

- a** 0 **b** 1 **c** $\{(1,1)\}$ **d** 9

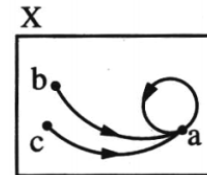
(22) $\{3\} \times [0,2]$ is represented by the figure



(23) If $R = \{(1,3), (2,5), (4,3)\}$ represent a function, then its domain =

- a** $\{1,2,4\}$ **b** $\{3,5,4\}$ **c** $\mathbb{Z}$ **d** $\mathbb{N}$

(24) The opposite figure represent the arrow diagram of a function on X.
The range =



- a** $\{a\}$ **b** $\{a,b\}$ **c** $\{a,b,c\}$ **d** $\{b,c\}$

(25) The set of images of each element of the domain of the function is called the

- a** domain **b** codomain **c** range **d** rule

(26) If the function $f : X \rightarrow Y$, then the range $\subset \dots\dots\dots$

- a** $X \times Y$ **b** X **c** Y **d** $Y \times X$

(27) The function $f(x) = x^5 - 3x^4 + 1$ is of degree.

- a** 4th **b** 9th **c** 5th **d** 2nd

(28) The function $f(x) = x(x - x^2)$ is a polynomial of degree.

- a** 1st **b** 2nd **c** 3rd **d** 4th

(29) The function $f(x) = x^2 - (x^2 - 3x)$ is a polynomial of degree.

- a** 1st **b** 2nd **c** 3rd **d** 4th

- (30) If $a = 0$ and $b \neq 0$, then the polynomial $f(x) = ax^2 + bx + c$ is of degree.
- a 1st b 2nd c 3rd d 4th
- (31) If $f(x) = x^2 - 1$, then $f(1) =$
- a 0 b 2 c -2 d 1
- (32) If $f(x) = x^2 - \sqrt{2}x$, then $f(\sqrt{2}) =$
- a 4 b 2 c 6 d 0
- (33) If $f(x) = kx + 8$ and $f(2) = 0$, then $k =$
- a 8 b 6 c 4 d -4
- (34) If $f(x) = nx^2 + 3x^n - 3$, the set of all possible values of n that makes the function is of 2nd degree is
- a {2,3} b {1,-1} c {0,1,2} d {2,1}
- (35) If $(a,a) \in f$ where $f(x) = 2x + 3$, then $a =$
- a 3 b -3 c 0 d 1
- (36) If $X = \{1,2,3\} \rightarrow f(x) = x^2 - 1$, then $f(4) =$
- a 15 b 17 c 3 d undefined
- (37) If the curve that represents the function $f(x) = x^2 + c$ passes through the point $(0,2)$, then $c =$
- a 3 b 2 c -3 d 1
- (38) The vertex of the curve that represents the function $f(x) = 2x^2 - 4x + 5$ is
- a (1,3) b (3,1) c (-1,3) d (3,-1)
- (39) If $f(x) = 5$, then $f(-3) =$
- a 5 b -5 c -3 d -15

- (40) If $f(x) = 2$, then $f(3) - f(1) = \dots\dots\dots$
 a 0 b $f(2)$ c 2 d 10
- (41) If $f(x) = 4$, then $f(4) \div f(10) = \dots\dots\dots$
 a 4 b $\frac{2}{5}$ c 1 d 10
- (42) If $f(2x) = 4$, then $f(-x) = \dots\dots\dots$
 a -2 b -4 c 4 d 2
- (43) $f(x) = 3x$ is represented by a straight line passes through the point $\dots\dots\dots$
 a (3,3) b (3,0) c (0,0) d (0,3)
- (44) If the straight line that represents the function $f(x) = 2x - a$ passes through the origin, then $a = \dots\dots\dots$
 a -3 b 2 c 0 d 3
- (45) If $(a, 4) \in f$ where $f(x) = 2x + b$, then $6a + 3b = \dots\dots\dots$
 a 12 b 9 c 6 d 3
- (46) If $f(x) = x^2$ and $x \in [-2, 2]$, then $f(x) \in \dots\dots\dots$
 a $[0, 4]$ b $]0, 4[$ c $[0, 1]$ d $[-4, 4]$
- (47) If $(x, 7)$ is located on Y-axis, then $5x + 1 = \dots\dots\dots$
 a 0 b 1 c 5 d 6
- (48) If $(a, 3)$ lies on the straight line that represents $f(x) = 2x - 5$, then $a = \dots\dots\dots$
 a 1 b 2 c -2 d 4
- (49) If $f(x) = 3x + b$ and $f(4) = 13$, then $b = \dots\dots\dots$
 a 1 b 2 c 0 d 3

- (50) If $f(x) = x - 6$ and $\frac{1}{3}f(a) = -2$, then $a = \dots\dots$
 a 1 b 0 c 2 d 6
- (51) The ordered pair (x,y) where $x > 0$ and $y < 0$ is located in the quadrant.
 a 1st b 2nd c 3rd d 4th
- (52) If $2x = 7y$, then $\left(\frac{x}{y}\right)^{-1} = \dots\dots\dots$
 a $\frac{2}{7}$ b $\frac{7}{2}$ c $\frac{49}{4}$ d $\frac{4}{49}$
- (53) If $a,b,2,3$ are proportional, then $\frac{b}{a} = \dots\dots\dots$
 a $\frac{3}{2}$ b $\frac{2}{3}$ c 3 d 2
- (54) If $a,1,b,2$ are proportional, then $\frac{a}{b} = \dots\dots\dots$
 a 2 b $\frac{1}{2}$ c $\frac{1}{3}$ d $\frac{1}{4}$
- (55) If $4x^2 = 9y^2$, then $\frac{x}{y} = \dots\dots\dots$
 a $\frac{9}{4}$ b $\frac{3}{2}$ c $\pm \frac{2}{3}$ d $\pm \frac{3}{2}$
- (56) If $\frac{a+2b}{a-b} = \frac{2}{3}$, then $\frac{b}{a} = \dots\dots\dots$
 a $\frac{1}{8}$ b 8 c $-\frac{1}{8}$ d -8
- (57) If $5a - 4b = 0$, then $\frac{a}{b} = \dots\dots\dots$
 a $\frac{4}{5}$ b $\frac{5}{4}$ c $-\frac{4}{5}$ d $-\frac{5}{4}$

- (58) If $\frac{5a - 7b}{8a + 11} = 0$, then $\frac{b}{a} = \dots\dots$
- a** $\frac{5}{7}$ **b** $\frac{7}{5}$ **c** $-\frac{8}{7}$ **d** 0
- (59) If $\frac{4}{x} = \frac{7}{y} = \frac{b}{y - x}$, then b =
- a** 3 **b** -3 **c** 11 **d** -11
- (60) If $\frac{a}{3} = \frac{b}{8} = \frac{a + \frac{1}{2}b}{x}$, then x =
- a** 7 **b** 11 **c** 9 **d** 5
- (61) If $\frac{a}{b} = \frac{c}{d} = m$ where $m \neq 0$, then $\frac{a \times c}{b \times d} = \dots\dots$
- a** $2m^2$ **b** m^2 **c** m **d** 2m
- (62) If $\frac{a}{5} = \frac{b}{7}$, then $7a - 5b + 3 = \dots\dots$
- a** 3 **b** 7 **c** 5 **d** 2
- (63) If $\frac{x}{5} = \frac{y}{4} = \frac{x + 2y}{k}$, then k =
- a** 9 **b** 14 **c** 13 **d** 8
- (64) If $\frac{a}{4} = \frac{b}{5}$ and $2a + 3b = 46$, then a =
- a** 2 **b** 4 **c** 5 **d** 8
- (65) If $\frac{a}{b} = \frac{2}{3}$ and $\frac{a}{c} = \frac{4}{5}$, then b : c =
- a** 3 : 4 **b** 5 : 6 **c** 6 : 5 **d** 4 : 3
- (66) The positive middle proportional between a and b is
- a** $\sqrt{ab}$ **b** $-\sqrt{ab}$ **c** $\pm \sqrt{ab}$ **d** ab

- (67) The third proportional of 9 and -12 is
- a** -16 **b** 8 **c** 16 **d** 108
- (68) If 6 is the middle proportional between m and 2, then m =
- a** 8 **b** 12 **c** 18 **d** 36
- (69) If $\frac{a}{b} = \frac{b}{c} = \frac{c}{5} = 2$, then a =
- a** 5×2^2 **b** 40 **c** 10 **d** 2×5^3
- (70) If $\frac{a}{b} = \frac{b}{c} = \frac{c}{d} = 2$, then $\frac{a}{d} =$
- a** 2 **b** 4 **c** 8 **d** 16
- (71) If a, 2, 4, b are in a continued proportional, then a + b =
- a** 8 **b** 1 **c** 9 **d** 7
- (72) The middle proportional between (x-2) and (x+2) is
- a** $\sqrt{x+2}$ **b** $\sqrt{x^2-4}$ **c** x^2-4 **d** $\pm \sqrt{x^2-4}$
- (73) The number that must be added to the numbers 1, 3, 6 to be in a continued proportional is
- a** 1 **b** 2 **c** 3 **d** 4
- (74) If $7, x, \frac{1}{y}$ are in a continued proportional, then $x^2 y =$
- a** 7 **b** 14 **c** 49 **d** 1
- (75) If y is the middle proportional between x and z, then $\frac{x}{z} =$
- a** $\frac{x^2}{y^2}$ **b** $\frac{y^2}{z^2}$ **c** $\frac{z^2}{y^2}$ **d** $\frac{y^2}{x^2}$
- (76) If $y = \frac{m}{x^2}$ where m is a constant $\neq 0$, then $y \propto$
- a** x^2 **b** x **c** $\frac{1}{x}$ **d** $\frac{1}{x^2}$

(77) If $x - 2y = 0$, then $x \propto$

- a** y **b** y^2 **c** $\frac{1}{y}$ **d** $\frac{1}{y^2}$

(78) The relation that represents a direct variation between x and y is

- a** $xy = 5$ **b** $y = x + 2$ **c** $\frac{x}{3} = \frac{4}{y}$ **d** $\frac{x}{5} = \frac{y}{2}$

(79) If y varies inversely as x and $x = \sqrt{3}$ when $y = \frac{2}{\sqrt{3}}$, then the proportion constant =

- a** $\frac{3}{2}$ **b** $\frac{2}{3}$ **c** 2 **d** 6

(80) If $xy^5 = \text{constant}$, then x varies inversely as

- a** $\frac{1}{5}$ **b** y^5 **c** y **d** y^2

(81) If $y \propto \frac{1}{\sqrt{x}}$, then x varies

- a** directly as y^2 **b** inversely as y^2
c inversely as $\sqrt{y}$ **d** inversely as y

(82) If $y = 3x - 6$, then $y \propto$

- a** x **b** $\frac{1}{x}$ **c** $x-2$ **d** $3x-6$

(83) If $\frac{y+3}{y} = \frac{x+2}{x}$, $x \neq 0$, $y \neq 0$, then $y \propto$

- a** x **b** $\frac{1}{x}$ **c** $x+2$ **d** $x+5$

(84) If $y - x = \frac{2}{y} - \frac{2}{x}$, $x \neq y$, then

- a** $y \propto x + 1$ **b** $y \propto x$ **c** $y \propto \frac{1}{x}$ **d** $y \propto \frac{1}{x^2}$

- (85) If $9, 2x, \frac{1}{y^2}$ are proportional, then $x \propto y = \dots\dots\dots$
- (a) $\frac{3}{2}$ (b) $-\frac{3}{2}$ (c) $\pm \frac{3}{2}$ (d) $\pm \frac{2}{3}$
- (86) If $\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = m$, then $\frac{ace}{bdf} = \dots\dots\dots$
- (a) $3m$ (b) m^2 (c) m^3 (d) m
- (87) If $y \propto x$ and $y = 2$ as $x = 4$, then $y = \dots\dots x$
- (a) 4 (b) 3 (c) 2 (d) $\frac{1}{2}$
- (88) The mean of the values 7,3,6,9,5 is $\dots\dots\dots$
- (a) 3 (b) 6 (c) 4 (d) 12
- (89) The range of the values 23,22,15,18,17 is $\dots\dots\dots$
- (a) 8 (b) 18 (c) 19 (d) 23
- (90) If 67 is the greatest value and the range is 27, then the smallest value is $\dots\dots\dots$
- (a) 67 (b) 40 (c) 27 (d) 94
- (91) The most common value of set of individuals is called $\dots\dots\dots$
- (a) median (b) range (c) mode (d) mean
- (92) If the mean of the values $3k-3$, $3k-1$, $2k+1$, $2k+3$, $2k+5$ is 13, then $k = \dots\dots\dots$
- (a) -5 (b) 10 (c) 5 (d) $\frac{1}{5}$
- (93) If the range of values 2,7,a,6 is 8 where $a > 0$, then $a = \dots\dots\dots$
- (a) 4 (b) 9 (c) -1 (d) 10
- (94) If $(x - \bar{x})^2 = 28$ for the set 7 values, then $\sigma = \dots\dots\dots$
- (a) 28 (b) 7 (c) 4 (d) 2

(95) If the function $f(x) = (k-3)x^3 + 2x^m + 1$ is of 2nd degree, then $k+m = \dots\dots\dots$

- a** 5 **b** 3 **c** 2 **d** -5

(96) The difference between the greatest value and the smallest value is called

- a** median **b** mean **c** range **d** mode

(97) If the standard deviation for the values 5, $x+2$ and $2y+1$ is zero, then $x + y = \dots\dots\dots$

- a** 10 **b** 5 **c** 15 **d** 0

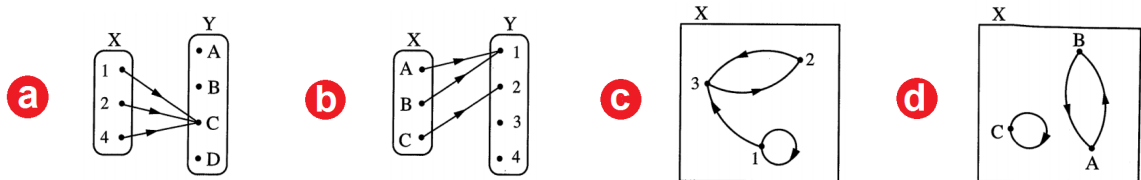
(98) The standard deviation for the values 7, 7, 7 is

- a** 49 **b** 7 **c** 3 **d** 0

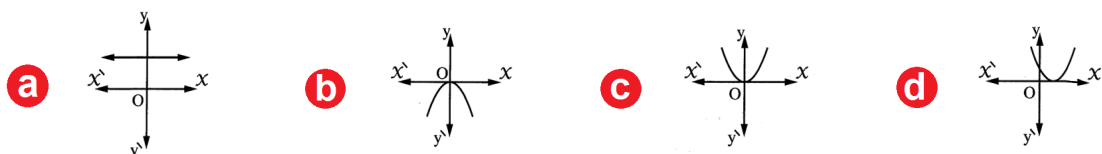
(99) If all individuals are equal, then

- a** $\bar{X}=0$ **b** $\bar{X} = 0$ **c** $\sigma=0$ **d** mode=0

(100) Which of the following arrow diagrams does not represent a function



(101) The graph of the function f where $f(x) = x^2 - 2x + 1$ is the graph number



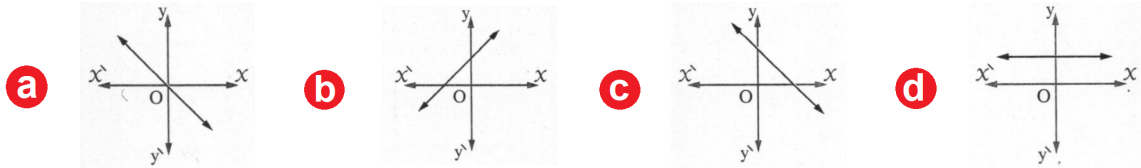
(102) If the curve of the function f where $f(x) = x^2 - a$ passes through the point (1, 0), then $a = \dots\dots\dots$

- a** ± 1 **b** -1 **c** 1 **d** zero

(103) If $f(x) = x^{k+3} + 2k$ is a quadratic function, then $f(2) = \dots\dots$

- a** 1 **b** -1 **c** 2 **d** -2

(104) The graph which represents the direct variation is number



Essay problems:

(1) If $X = \{1, 5, 6\}$ and $Y = \{5\}$ and $Z = \{2, 3\}$, Find:

- (a)** $n(X \times Z)$.
(b) $(Y \cap X) \times (X - Y)$.

(2) If $X \times Y = \{(2, 3), (2, 6), (2, 7)\}$, Find:

- (a)** X and Y .
(b) Y^2 .
(c) $n(X^2)$.

(3) If $X = \{2, 3\}$, $Y = \{3, 4\}$ and $Z = \{4, 5\}$, Find:

- (a)** $Z \times (X \cap Y)$
(b) $(Z - Y) \times X$

(4) If $(x+3, 8) = (5, 2^y)$, then find the value of x and y .

(5) If $(x-2, 9) = (5, x+y)$, find the value of $\sqrt{3x+2y}$.

(6) If $(x^2, |y|) = (4, 3)$ and (x, y) located in the 3rd quadrant, then find $x+y$.

(7) If $X = \{1, 3, 5\}$ and $Y = \{1, 2, 4, 5, 6\}$ and R is a relation from X to Y where aRb means $a+b=7$ for $a \in X$ and $b \in Y$. Write R , represent it by the arrow diagram, show that R is a function and write its range.

- (8) If $X=\{1,3,5\}$ and R is a function on X where $R=\{(a,3), (b,1), (1,5)\}$. Find the value of $a+b$.
- (9) If $f(x)=2x^2-5x+2$, prove that $f(2)=f(\frac{1}{2})$
- (10) If f is a function on X where $X=\{3,4,5,6\}$ and $f(3)=3$, $f(4)=5$, $f(5)=5$, $f(6)=5$. represent f by an arrow diagram, write f and find its range.
- (11) If the straight line which represents the function $f(x)=ax+b$ intersects X -axis at $(3,0)$ and Y -axis at $(0,-3)$, find the value of a and b .
- (12) If $(2a,5a) \in f$ where $f(x)=2x+5$, find the value of a and identify the intersection points of the straight line with the coordinates axes.
- (13) If $f(x)=(3-a)x^2+(b+5)x+4$ is a constant function. Find the value of $a+b$.
- (14) If the vertex of the curve of the function $f(x)=x^2-ax+3$ is $(2,k)$. Find the value of a and k .
- (15) Represent graphically the function $f(x)=4-x^2$, where $x \in [-3,3]$ and from the graph identify:
 (a) The vertex.
 (b) The equation of the axis of symmetry.
 (c) The maximum or minimum value.
- (16) Represent graphically the function $f(x)=x^2+2x+1$, where $x \in [-4,2]$ and from the graph identify:
 (a) The vertex.
 (b) The equation of the axis of symmetry.
 (c) The maximum or minimum value.
- (17) If $\frac{x-2y}{x+3y} = \frac{1}{3}$, find the value $\frac{y}{x}$.

- (18) If $\frac{x}{y} = \frac{2}{3}$, find the value of $\frac{3x + 2y}{6y - x}$.
- (19) Find the number that if added to the two terms of the ratio 7:11 it becomes 2:3
- (20) Find the number must be added to each of the numbers 3,5,8 and 12 to be proportional.
- (21) Find the number if subtract its triple from the two terms of the ratio 49:69 it becomes 2:3.
- (22) Find the number if we added its square to the two terms of the ratio 7:11 it becomes 4:5
- (23) If $\frac{a + b}{b} = \frac{c + d}{d}$, **prove that** a, b, c and d are proportional.
- (24) If $\frac{a}{b - a} = \frac{c}{d - c}$, **prove that** a, b, c and d are proportional.
- (25) If a, b, c and d are proportional, **prove that**:
- $\frac{3a + c}{5a - 2c} = \frac{3b + d}{5b - 2d}$
 - $\frac{a^2 + b^2}{ab + cd} = \frac{a}{b}$
 - $\frac{ac}{bd} = \left(\frac{a - c}{b - d}\right)^2$.
- (26) If $\frac{x}{3} = \frac{y}{4} = \frac{z}{5}$, **prove that** $\frac{2y - z}{3x - 2y + z} = \frac{1}{2}$.
- (27) If $\frac{a}{2} = \frac{b}{3} = \frac{c}{4} = \frac{2a - b + 5c}{3x}$, **find** the value of x.
- (28) If $\frac{x}{a - b + c} = \frac{y}{b - c + a} = \frac{z}{c - a + b}$, **prove that** $\frac{x + y}{a} = \frac{y + z}{b}$.

(29) If $\frac{x}{2a+b} = \frac{y}{2b-c} = \frac{z}{2c-a}$, prove that

$$\frac{2x+y}{4a+4b-c} = \frac{2x+2y+z}{3a+6b}.$$

(30) If $\frac{a+b}{4} = \frac{b+c}{5} = \frac{c+a}{7}$, prove that $\frac{a+b+c}{8} = \frac{a}{3}$.

(31) If $a, 3, 9, b$ are in a continued proportion, find the value of a and b .

(32) If $\frac{a^2+b^2}{b^2} = \frac{b^2+c^2}{c^2}$, prove that b is a middle proportion between a and c where ac is a positive quantity.

(33) If b is a middle proportion between a and c , prove that:

(a) $\frac{a}{c} = \frac{b^2}{c^2}.$

(b) $\frac{a^2+b^2}{b^2+c^2} = \frac{a}{c}.$

(34) If Y varies directly as X and $Y=20$ as $X=7$, Find the relation between X and Y , then find the value of X as $Y=4$.

(35) If $Y \propto X$ and $Y=14$ as $X=42$, Find:

(a) The relation between Y and X .

(b) The value of Y as $X=60$.

(36) If $Y \propto \frac{1}{x}$ and $Y=3$ as $X=2$, Find:

(a) The relation between Y and X .

(b) The value of Y as $X=1.5$

(37) If $\frac{a+2b}{6} = \frac{b+3c}{3}$, prove that $a \propto c$.

(38) If $x^2y^2 - 6xy + 9 = 0$, prove that $y \propto \frac{1}{x}$.

(39) If $4x^2 + 9y^2 = 12xy$, prove that $y \propto x$.

(40) From the opposite table:

X	2	4	6
Y	6	3	2

(a) Determine the type of variation.

(b) Find the constant of variation.

(c) Find the value of y as $x=3$

(41) If $y=z+5$, $z \propto \frac{1}{x}$ and $y=6$ as $x=2$. Find the relation between x and y , then find the value of y as $x=1$

(42) Calculate the mean and the standard deviation of the following values:

(a) 15, 6, 8, 12, 4.

(b) 5, 6, 7, 8, 9.

(43) Calculate the standard deviation of the following frequency distributions:

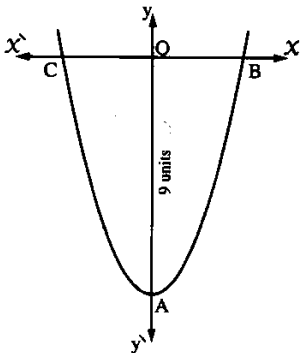
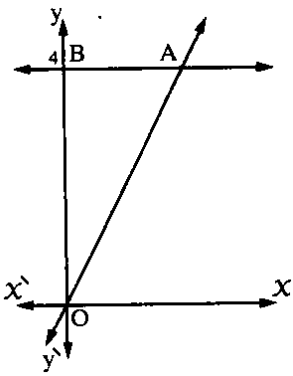
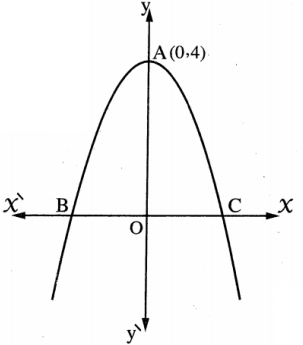
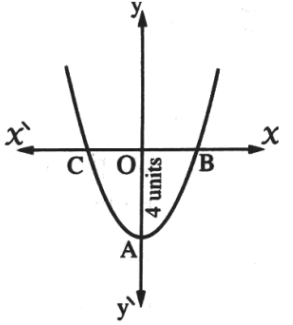
(a)

Values	0	1	2	3	4	5
Frequency	9	15	17	25	20	14

(b)

Sets	0-	2-	4-	6-	8-
Frequency	1	5	9	3	2

Drawn problems:

(1)	The opposite figure represents the curve of the function f where $f(x) = x^2 + k$. Find: (a) The value of k. (b) The coordinates of B and C. (c) the area of triangle with vertices A, B, C	
(2)	The $\overleftrightarrow{AO}$ represents a linear function f where $f(x) = nx + k$ and the area of the $\triangle ABO$ is 4 square units. Find the value of n and k.	
(3)	The opposite figure represents the curve of the quadratic function f where $f(x) = 4 - kx^2$, if the area of $\triangle ABC$ is 8 square units, Find: (a) The value of k. (b) The coordinates of B. (c) The maximum or minimum value. (d) The equation of the axis of symmetry.	
(4)	The opposite figure represents the curve of the function f where $f(x) = x^2 - m$, Find: (a) The value of m. (b) The area of $\triangle ABC$.	

SECOND: GEOMETRY

Choose the correct answer:

- (1) The straight line whose slope $m_1=2$ intersects a straight line in one point, then the slope $m_2 \neq$
 (a) 2 (b) -2 (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$
- (2) The area of triangle that bounded by the straight lines: $x = 0$, $y = 0$ and $3x-4y=12$ is square unit
 (a) 4 (b) 6 (c) 12 (d) 10
- (3) ABCD is a square in which A(1,0) and B(5,-3), then the perimeter of the square is length unit
 (a) 5 (b) 10 (c) 20 (d) 15
- (4) If C(2,-1) is the midpoint of $\overline{AB}$, A(2,3), then the coordinates of B is
 (a) (1,2) (b) (2,1) (c) (2,-5) (d) (-5,2)
- (5) The distance between (0,0) and (3,-4) is length unit.
 (a) 1 (b) 5 (c) -1 (d) 7
- (6) The equation of the straight line passes through (3,5) and parallel to X-axis is
 (a) $Y=3$ (b) $X=3$ (c) $Y=5$ (d) $X=5$
- (7) $\overline{AB}$ is a diameter in the circle M, A(-2,3) and B(6,-5), then the coordinates of M is
 (a) (4,4) (b) (-2,1) (c) (2,-1) (d) (-1,2)

- (8) The straight line whose equation: $3x+4y-9=0$ is perpendicular to the straight line whose slope
- a $\frac{3}{4}$ b $\frac{4}{3}$ c $-\frac{4}{3}$ d $-\frac{3}{4}$
- (9) The distance between the point $(3, -4)$ and the X-axis equals length unit.
- a -3 b 4 c -4 d 3
- (10) The straight line whose slope equals to the additive identity is parallel to the straight line whose equation is
- a $Y=X$ b $Y=1$ c $X=1$ d $Y=-X$
- (11) If the X-axis bisect $\overline{AB}$ where $A(4,2)$ and $B(-2,y)$, then $y=.....$
- a 3 b 2 c -2 d 4
- (12) Two perpendicular straight lines, the slope of the first is $-\frac{1}{4}$ and the slope of the second is $4k$, then $k =$
- a 4 b 1 c -4 d $\frac{1}{4}$
- (13) If the two straight lines: $x+y=5$ and $kx+2y=0$ are parallel, then $k =$
- a -2 b -1 c 1 d 2
- (14) If the straight line whose equation $bx+a=cy$ and passing through the origin, then = 0
- a $b \times c$ b c c b d a
- (15) The straight line whose equation $y=x$ passing through
- a $(-1,0)$ b $(0,0)$ c $(1,0)$ d $(0,-1)$
- (16) The slope of the straight line whose equation $cx+ay=b$ is
- a $-\frac{a}{b}$ b $-\frac{a}{c}$ c $-\frac{b}{c}$ d $-\frac{c}{a}$

(17) If $\frac{5}{4}$ and $\frac{k}{2}$ are two slopes of two perpendicular straight lines, then $k = \dots\dots\dots$

- a $-\frac{5}{8}$ b $\frac{5}{8}$ c $\frac{8}{5}$ d $-\frac{8}{5}$

(18) A circle, its center is the origin point, and its radius length is 3 length units, then the point $\dots\dots\dots$ belongs to the circle.

- a (1,3) b $(-2, \sqrt{5})$ c (3,1) d (2,1)

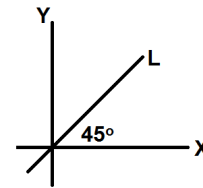
(19) The perpendicular distance between $y=3$ and $y=-2$ is $\dots\dots\dots$

- a 1 b 2 c 3 d 5

(20) If $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$ and the slope of $\overleftrightarrow{AB} = -2$, then the slope of $\overleftrightarrow{CD}$ is $\dots\dots\dots$

- a -2 b $-\frac{1}{2}$ c $\frac{1}{2}$ d undefined

(21) The equation of the straight line L is $\dots\dots\dots$



- a $X=1$ b $Y=1$ c $Y=X$ d $Y=-X$

(22) ABCD is a parallelogram, then slope of $\overleftrightarrow{AB} =$ the slope of $\dots\dots\dots$

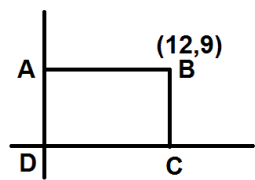
- a $\overleftrightarrow{AD}$ b $\overleftrightarrow{AC}$ c $\overleftrightarrow{BC}$ d $\overleftrightarrow{CD}$

(23) The length of the intercepted part of Y-axis by the straight line $3y=4x-12$ equals $\dots\dots\dots$ length unit.

- a 3 b -4 c 4 d 12

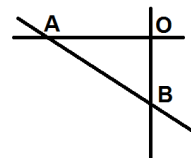
(24) The circumference of a circle whose center (0,0) and passing through the point (3,4) is $\dots\dots\dots$ length unit.

- a 5π b 10π c 4π d 6π

- (25) The slope of the straight line which makes an angle of measure θ with the positive direction of X-axis is
- a $\sin \theta$ b $\cos \theta$ c $\tan \theta$ d $\sin \theta + \theta$
- (26) $\overline{AB}$ is a diameter in a circle where $A(-1,5)$ and $B(3,1)$, then the coordinates of the center is
- a $(2,6)$ b $(1,3)$ c $(4,-4)$ d $(-4,4)$
- (27) The slope of the straight line that parallel to the Y-axis (perpendicular to X-axis) is
- a 0 b 1 c -1 d undefined
- (28) In the opposite figure: ABCD is a rectangle. AD = length unit.
- 
- a 9 b 12 c 13 d 0
- (29) If $(0,a)$ belongs to the straight line $3x-4y+12=0$, then $a = \dots$
- a -3 b 4 c 3 d -4
- (30) The equation of the straight whose slope is 1 and passing through the origin is
- a $X=1$ b $Y=1$ c $Y=X$ d $Y=-X$
- (31) The slope of the straight line which makes an angle of measure 45° with the positive direction of X-axis is
- a 1 b -1 c 0 d 2
- (32) If $\overleftrightarrow{AB}$ is parallel to x-axis where $A(8,3)$ and $B(2,k)$, then $k=...$
- a 8 b 0 c 3 d 2
- (33) If $\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$, $A(-1,2)$ and $B(0,0)$, then the slope of $\overleftrightarrow{CD}$ is
- a -2 b $\frac{1}{2}$ c $-\frac{1}{2}$ d 2

- (34) If the distance between $(a,0)$ and $(0,1)$ is 1 length unit, then a =
- a -1 b 0 c 1 d ± 1
- (35) If the slope of the straight line $ax-y+5=0$ is 3, then a =
- a 5 b -5 c 1 d 3
- (36) The straight line passing through $(-1,-1)$ and $(4,4)$ makes an angle with positive direction of X-axis of measure°
- a 30 b 45 c 60 d 135
- (37) The slope of the straight line $2y = \frac{1}{2}(3 - 5x)$ is
- a $-\frac{5}{2}$ b $-\frac{5}{4}$ c $\frac{3}{4}$ d $\frac{3}{2}$
- (38) The straight line $3x+4y=9$ is perpendicular to the straight line whose slope is
- a $\frac{4}{3}$ b $\frac{3}{4}$ c $-\frac{4}{3}$ d $-\frac{3}{4}$
- (39) ABCD is a square and $A(2,-5)$, $B(-1,-1)$, then its perimeter is length unit.
- a 5 b 20 c 7 d 28
- (40) If the slopes of two straight lines are equal, then the two straight lines are
- a perpendicular b parallel
c intersecting d skew
- (41) The length of the Y intercept by the straight line $2x-3y=6$ equals length unit.
- a -6 b -2 c 6 d 2

- (42) The equation of Y-axis is
- a $X=0$ b $Y=0$ c $Y=X$ d $XY=1$
- (43) The points $(-3,0)$, $(0,3)$ and $(3,0)$ are vertices of triangle whose type
- a scalene b isosceles
c obtuse-angled d isosceles and right-angled
- (44) If the slope of a straight line is greater than 0, then the angle with the positive direction of X-axis is
- a obtuse b acute c right d straight
- (45) If the slope of the straight line $y+ax+b=0$ is -3 and passing through $(1,4)$, then $a+b=$
- a 4 b 7 c -4 d -7
- (46) If the slope of the straight line passing through the two points $(k,2k+1)$ and $(k-2,4k-1)$ is 3, then $k =$
- a 2 b -2 c 3 d -3
- (47) If the straight line $y=(a-1)x +5$ is parallel to the straight line that passing the two points $(1,2)$ and $(3,8)$, then $a =$
- a 3 b 4 c -4 d 7
- (48) In the opposite figure: $3 OA = 4 OB$, then the equation of $\overleftrightarrow{AB}$ is



- a $y = -\frac{3}{4}x + 3$ b $y = -\frac{3}{4}x - 3$
c $y = -\frac{4}{3}x + 3$ d $y = -\frac{4}{3}x - 3$

- (49) If the straight line $x - \sqrt{3}y = 2$ makes an angle with the positive direction of x-axis of measure $(2k+20)^\circ$, then $k = \dots\dots$
- a 30 b 20 c 10 d 5
- (50) If $\sin \theta = \cos 2\theta$ where θ is an acute angle, then $\theta = \dots^\circ$
- a 45 b 30 c 60 d 15
- (51) $\frac{\sin \theta}{\cos \theta} = \dots\dots$
- a 1 b $\tan \theta$ c $\sin \theta$ d $\cos \theta$
- (52) ABC is an isosceles triangle and $\tan\left(\frac{A}{2}\right) = 1$, then $\tan B = \dots\dots$
- a 1 b $\frac{1}{2}$ c 2 d 45°
- (53) $\tan \theta \times \cos \theta = \dots\dots$
- a $\cos \theta$ b $\sin \theta$ c 1 d 0
- (54) ABC is a right-angled triangle at B and $AB = \frac{1}{2} AC$, then $\cos A = \dots\dots$
- a $\frac{1}{2}$ b $\frac{\sqrt{3}}{2}$ c $\frac{1}{\sqrt{2}}$ d $\frac{1}{\sqrt{3}}$
- (55) ABC is a triangle where $m(\angle B) = m(\angle A) + m(\angle C)$, then $\tan \frac{B}{2} = \dots\dots$
- a 45 b 1 c $\frac{1}{2}$ d $\frac{\sqrt{3}}{2}$
- (56) $4 \cos 30 \tan 60 = \dots\dots$
- a 3 b $2\sqrt{3}$ c 6 d 12
- (57) If $\cos 2\theta = \frac{1}{2}$ where θ is an acute angle, then $\theta = \dots^\circ$
- a 15 b 30 c 45 d 60

(58) If $\tan \frac{3x}{2} = 1$ where x is an acute angle, then $m(\angle x) = \dots^\circ$

- a 10 b 30 c 45 d 60

(59) If $\cos \frac{x}{2} = \frac{\sqrt{3}}{2}$ where x is an acute angle, then $\sin x = \dots$

- a $\frac{1}{2}$ b $\frac{\sqrt{3}}{2}$ c $\frac{2}{\sqrt{3}}$ d $\frac{1}{\sqrt{3}}$

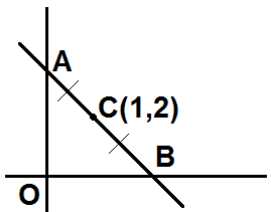
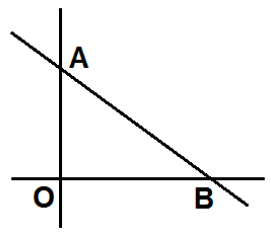
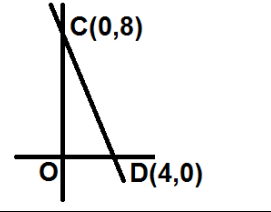
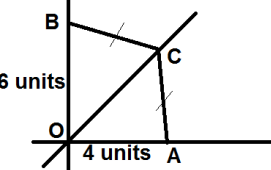
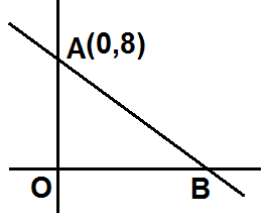
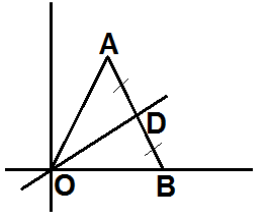
Essay problems:

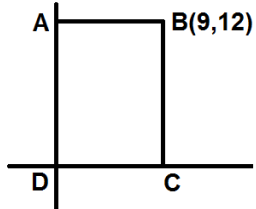
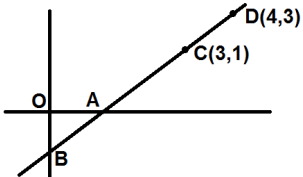
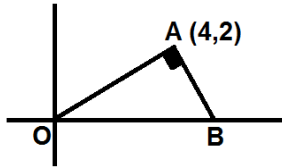
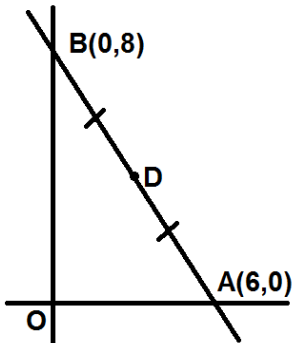
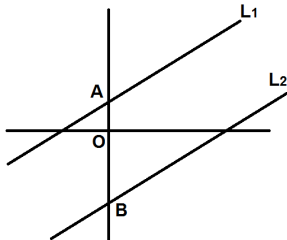
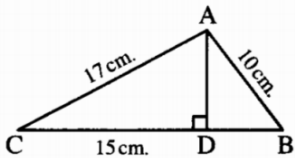
- (1) If $2 \sin x = \sin 30^\circ \cos 60^\circ + \cos 30^\circ \sin 60^\circ$, **find** the value of x .
- (2) ABC is a right angled triangle at B and $2AB = \sqrt{3} AC$, **find** the trigonometric ratios of $(\angle A)$.
- (3) If the ratio between two supplementary angles is 3:5, **find** the measure of each of them.
- (4) If $\sin (2x+20) = \cos (x+50)$, **find** the value of x .
- (5) ABC is a right-angled triangle at C, $AB=13$ cm, $BC=12$ cm. **Prove that:** $\sin A \cos B + \cos A \sin B = 1$
- (6) Find the equation of a straight line whose slope is 2 and intercepts the positive direction of Y-axis a part of length 7 units.
- (7) Find the equation of a straight line whose slope $-\frac{1}{2}$ and passing through the point (3,5).
- (8) Find the equation of a straight line which passes through the points (2,3) and (-3,2).

- (9) Find the equation of a straight line which passes through the point (3, -5) and parallel to the straight line $x+2y-7=0$
- (10) Find the equation of a straight line which passes through the point (1, 2) and perpendicular to the straight line which passes through the points (3, 2) and (5, -4).
- (11) Find the equation of a straight line whose slope equals the slope of the straight line $\frac{y-1}{x} = \frac{1}{3}$ and intercepts the negative direction of Y-axis a part of length 3 units.
- (12) Find the equation of a straight line which intercepts the two axes two positive parts of length 4 and 9 respectively.
- (13) ABCD is a square in which A(5, 4) and C(-1, 6). Find the equation of $\overleftrightarrow{BD}$.
- (14) ABCD is a rhombus in which A(1, 3) and C(6, 0). Find the equation of $\overleftrightarrow{BD}$.
- (15) Find the equation of the straight line which passes through A(2, 3) and B(-1, -3) then prove that $C \in \overleftrightarrow{AB}$ where $C(2k+1, 4k+1)$.
- (16) ABC is a triangle where A(1, 3), B(5, -2), C(3, 4), D is the midpoint of $\overline{AB}$, $\overleftrightarrow{DE} \parallel \overleftrightarrow{BC}$ intersects $\overline{AD}$ in E. Find:
(a) the length of $\overline{DE}$. (b) the equation of $\overleftrightarrow{DE}$
- (17) The opposite table represents a linear relation:
- | | | | |
|------|---|---|---|
| x | 1 | 2 | 3 |
| f(x) | 1 | 3 | a |
- (a) Find the equation of the straight line.
(b) Find the length of y intercept.
(c) Find the value of a.
- (18) If A(-3, 4), B(5, -1) and C(3, 5). Find the equation of the straight line which passes through A and the mid point of $\overline{BC}$.

- (19) Find the equation of the straight line which passes through the point (3,5) and intercepts a part of the positive direction of X-axis of length 4 units.
- (20) Find the equation of line of symmetry of $\overline{XY}$ where X(3,-2) and Y(-5,6).
- (21) If the distance between (a,5) and (6,1) is $2\sqrt{5}$, **find** the value of a.
- (22) If A(x,3), B(3,2), C(5,1) and AB=BC, **find** the value of x.
- (23) If C(x,-3) is the midpoint of AB where A(-3,y) and B(9,-7), **find** the value of x and y.
- (24) Prove that A(4,3), B(1,1) and C(-5,-3) are collinear.
- (25) If (1,1), (3,5) and (5,a) are collinear, **find** the value of a.
- (26) Prove that the triangle whose vertices are A(5,-5), B(-1,7) and C(15,15) is right-angled at B, then **find** its area.
- (27) Determine the type of $\triangle ABC$ according to the length of its sides where A(-2,4), B(3,1) and C(4,5).
- (28) If A(5,3), B(6,-2), C(1,-1) and D(0,4). Prove that ABCD is a rhombus and **find** its area.
- (29) ABCD is a parallelogram in which A(3,4), B(2,-1), C(-4,-3). **Find** the coordinates of D.
- (30) If A(3,-2), B(-5,0), C(8,-9) and D(0,7) **prove that** ABDC is a parallelogram.

Drawn Problems:

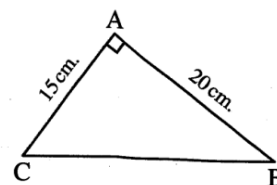
(1)	From the opposite figure, Find: (a) the coordinates of A and B (b) The area of $\triangle AOB$.	
(2)	In the opposite figure, if $\overleftrightarrow{AB}$ intercepts Y-axis in the positive direction a part of 3 units and $AB = 5$ units. Find: the equation of $\overleftrightarrow{AB}$	
(3)	The equation of $\overleftrightarrow{AB}$ is $CX+Y+D=0$, find the value of C and D.	
(4)	The equation of $\overleftrightarrow{OC}$ is $Y=X$, find the coordinates of C.	
(5)	In the opposite figure, if $\tan(\angle ABO) = \frac{4}{3}$, Find: (a) $m(\angle BAO)$ (b) the coordinates of B (c) The slope of $\overleftrightarrow{AB}$. (d) The equation passes through O and perpendicular to $\overleftrightarrow{AB}$	
(6)	In the opposite figure, ABO is an equilateral triangle, D is the midpoint of AB, Find: (a) The slope of $\overleftrightarrow{AB}$. (b) The equation of $\overleftrightarrow{OD}$. (c) If $(5\sqrt{3}, k) \in \overleftrightarrow{OD}$, find the value of k.	

(7)	ABCD is a rectangle, find length of $\overline{AD}$.	
(8)	Find the length of each $\overline{AD}$ and $\overline{OB}$	
(9)	Find: (a) The coordinates of B. (b) The equation of $\overleftrightarrow{AB}$. (c) $\tan (\angle ABO)$	
(10)	From the opposite figure, Find: (a) The length of $\overline{AB}$. (b) The coordinates of D. (c) $m(\angle ABO)$. (d) The slope of the perpendicular to $\overleftrightarrow{AB}$. (e) The equation of the straight line which is parallel to $\overleftrightarrow{AB}$ and passes through the origin. (f) $\sin A \cos B + \cos A \sin B$	
(11)	If $L_1 \parallel L_2$, the equation of L_1 is $y = \frac{2}{3}x + 2$ and $AB = 5$ units. Find the equation of L_2 .	
(12)	In the opposite figure : $\overline{AD} \perp \overline{BC}$, $AC = 17$ cm. , $DC = 15$ cm. , $AB = 10$ cm. Find the value of : $3 \tan (\angle C) + \sin (\angle B)$	

(13) In the opposite figure :

ABC is a triangle in which : $m(\angle A) = 90^\circ$
 , AC = 15 cm. and AB = 20 cm.

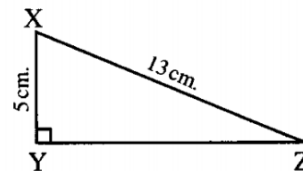
Prove that : $\cos C \cos B - \sin C \sin B = \text{zero}$



(14) In the opposite figure :

XYZ is a triangle , $m(\angle Y) = 90^\circ$
 XY = 5 cm. , XZ = 13 cm.

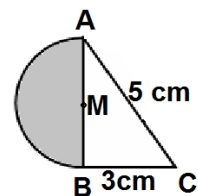
Find: $\sin X \cos Z + \cos X \sin Z$



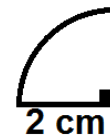
THIRD: ACCUMULATIVE SKILLS GEOMETRY

- (1) The sum of measure of accumulative angles at point =°
 a 90 b 180 c 270 d 360
- (2) The sum of measures of interior angles of the pentagon =°
 a 180 b 360 c 540 d 720
- (3) The number of diagonals of the hexagon =
 a 6 b 3 c 12 d 9
- (4) ABC is a triangle in which $m(\angle B) = 3m(\angle A) = 90^\circ$, then $m(\angle C) = \dots^\circ$
 a 30 b 45 c 60 d 90
- (5) ABCD is a parallelogram $m(\angle A) : m(\angle B) = 1 : 3$, then $m(\angle B) = \dots^\circ$
 a 45 b 135 c 120 d 115
- (6) If 3, 7, L are lengths of sides of triangle, then L may =
 a 3 b 4 c 7 d 10
- (7) ABC is an isosceles triangle, the lengths of two sides 3cm and 7cm, then the third side may = cm
 a 3 b 7 c 4 d 10
- (8) ABC is a triangle in which $AB = AC$ and $m(\angle A) = 60^\circ$, then the number of axes of symmetry of this triangle =
 a 1 b 3 c 0 d 2
- (9) The number of axes of symmetry of a circle is
 a 0 b 1 c 4 d infinite

- (10) ABC is a triangle in which $m(\angle B) > m(\angle C)$, then
 a $AC - AB < 0$ b $AC - AB \leq 0$ c $BC \leq AB$ d $AC > AB$
- (11) The base angles of the isosceles triangle are
 a congruent b supplementary
 c equal d complementary
- (12) The angle of measure supplements an angle of measure 120° .
 a 120 b 240 c 60 d 30
- (13) The quadrilateral whose diagonals perpendicular and equal in length is called
 a square b rhombus c circle d rectangle
- (14) The volume of a cuboid whose dimensions $\sqrt{2}, \sqrt{3}, \sqrt{6}$ is cm^3
 a $2\sqrt{6}$ b $3\sqrt{6}$ c $2\sqrt{3}$ d 6
- (15) The measure of exterior angle of an equilateral triangle is ...°
 a 60 b 80 c 100 d 120
- (16) IF $\overline{AB} \equiv \overline{CD}$, then $AB - CD =$
 a 0 b 1 c -1 d 2
- (17) The image of the point $(-3, 7)$ by reflection in Y-axis is
 a $(3, 7)$ b $(-3, -7)$ c $(3, -7)$ d $(-3, 7)$
- (18) From the opposite figure, the area of the shaded part is cm^2



- (19) The opposite figure represents a quarter of a circle of radius length 2cm, then the perimeter of the figure is cm



- a 2π b 5π c $\pi+4$ d $4\pi+4$
- (20) In $\triangle ABC$, if $m(\angle C) = m(\angle A) + m(\angle B)$, then ABC is
- a acute-angled triangle c right-angled triangle
 b isosceles triangle d obtuse-angled triangle
- (21) In any triangle ABC, $AB + BC - AC > \dots\dots\dots$
- a 0 b 1 c AC d otherwise
- (22) The sum of lengths of any two sides in a triangle is the length of the third side.
- a more than b less than c equal to d twice
- (23) The type of the angle of measure 108° is
- a right b obtuse c acute d reflex
- (24) If ABCD is a parallelogram, then $AB + CD = \dots\dots\dots$
- a $2AC$ b $2BC$ c $2BD$ d $2CD$
- (25) If ABCD is a parallelogram and $m(\angle A) + m(\angle C) = 150^\circ$, then $m(\angle B) = \dots\dots\dots^\circ$
- a 75 b 30 c 105 d 100
- (26) Two equal complementary angles, the measure of each of them is $^\circ$
- a 50 b 60 c 45 d 30
- (27) The length of side opposite to the angle of measure 30° in the right angled triangle equals the length of the hypotenuse.
- a 2 b $\frac{1}{2}$ c $\frac{1}{3}$ d $\frac{2}{3}$

- (28) In the $\triangle ABC$, if $AB > AC$, then $m(\angle B) \dots\dots\dots m(\angle C)$.
- a $>$ b $<$ c $=$ d $\equiv$
- (29) The concurrence point of medians of triangle divides each median in the ratio : from the vertex.
- a 1:1 b 2:3 c 1:2 d 2:1
- (30) The circumference of a circle whose its diameter length 14 cm is cm
- a 7 b 22 c 44 d 14
- (31) The image of $(-4, 5)$ by a translation $(2, -3)$ is
- a $(-2, -2)$ b $(2, -2)$ c $(2, 2)$ d $(-2, 2)$
- (32) ABC is a right-angled triangle at B, $AB = 3\text{cm}$, $BC = 4\text{cm}$, then the area of triangle = cm^2
- a 9 b 6 c 12 d 7
- (33) If the perimeter of a square is 16 cm, then its area = cm^2
- a 64 b 16 c 8 d 4
- (34) The sum of measure of two supplementary angles = $^\circ$
- a 360 b 270 c 180 d 90
- (35) Which of the following are sides of a right-angled triangle?
- a 3,4,6 b 5,12,13 c 6,8,9 d 9,5,14
- (36) The isosceles trapezium has axes of symmetry
- a 1 b 2 c 0 d 3
- (37) The rhombus (rectangle) has axes of symmetry
- a 0 b 1 c 2 d 3
- (38) The square has axes of symmetry
- a 1 b 2 c 3 d 4

FOURTH: ACCUMULATIVE SKILLS ALGEBRA

- (1) $\{3\} \subset \dots\dots\dots$
 a $(3,7)$ b $]3,7]$ c $]3,7[$ d $\{3,7\}$
- (2) $[2,7] - \{2,7\} = \dots\dots\dots$
 a $[1,6]$ b $\emptyset$ c $]2,7[$ d $\{0\}$
- (3) 2 567 approximated to the nearest five is
 a 2 560 b 2 565 c 2 570 d 2 575
- (4) $2^{2017} = 2^{2016} + \dots\dots\dots$
 a 1 b 2 c 2016 d 2^{2016}
- (5) If $[-1,x] \cap [y,5] = [2,3]$, then $x^y = \dots\dots\dots$
 a 8 b $\frac{1}{5}$ c 9 d -1
- (6) When the side length of a square increases by the ratio 10%, then its area increases by the ratio %
 a 10 b 15 c 20 d 21
- (7) The ratio between the area of a square shaped region of side length x cm to the area of another square shaped region of side length $2x$ cm is
 a 1:2 b $x:4$ c 1:4 d 4:1
- (8) If x is an odd number, then the next odd number is
 a x^2 b x^2+x c $x+1$ d $x+2$

- (9) If M represents a negative number, which of the following represents a positive number?
- a M^3 b M^2 c $2M$ d $M \div 2$
- (10) Half of the number 2^{20} is
- a 2^{10} b 1^{20} c 2^{19} d 1^{10}
- (11) $3^{25} + 3^{25} + 3^{25} = \dots\dots\dots$
- a 3^{75} b 3^{50} c 3^{26} d 3^{25}
- (12) $3^x + 3^x + 3^x = \dots\dots\dots$
- a 3^x b 3^{3x} c 3^{x+1} d 3^{x+3}
- (13) $2^5 + 2^5 + 2^5 + 2^5 = \dots\dots\dots$
- a 2^7 b 2^6 c 2^4 d 2^{20}
- (14) If $x + y = 5$ and $x - y = \frac{1}{5}$, then $x^2 - y^2 = \dots\dots\dots$
- a 125 b 1 c 25 d 5
- (15) If $x + y = x y = 5$, then $x^2 y + y^2 x = \dots\dots\dots$
- a 10 b 15 c 20 d 25
- (16) If $(x - y)^2 = 20$ and $x^2 + y^2 = 10$, then $x y = \dots\dots\dots$
- a 10 b 5 c -5 d 20
- (17) If $1 < x < 3$, then $(3x-1) \in \dots\dots\dots$
- a $[2,8[$ b $[2,8]$ c $]2,8[$ d $\{2,8\}$
- (18) The S.S. of the inequality $5-3x > 11$ in $\mathbb{R}$ is
- a $] -\infty, -2[$ b $] -2, \infty[$ c $] -\infty, -2]$ d $[-2, 2]$

(19) The sum of the two square roots of the number $2\frac{1}{4}$ is

- a** zero **b** $\frac{3}{2}$ **c** 3 **d** $\frac{9}{4}$

(20) Four times the number 2^8 is

- a** 2^{32} **b** 8^8 **c** 2^{10} **d** 4^8

(21) If $x = \sqrt{3} + \sqrt{2}$ and $y = \frac{1}{\sqrt{3} + \sqrt{2}}$, then $(x + y)^2 = \dots\dots\dots$

- a** 8 **b** 0 **c** 9 **d** 12

(22) If $2^x = \frac{1}{8}$, then $x = \dots\dots\dots$

- a** $\frac{1}{2}$ **b** $\frac{1}{3}$ **c** 3 **d** -3

(23) If 100 grams of food contains 300 calories, then how many calories are there in 30 grams of the same food?

- a** 90 **b** 100 **c** 1 000 **d** 9 000

(24) A book contains 56 pages. How many times the number 5 appears in the pages serial of this book?

- a** 6 **b** 7 **c** 12 **d** 13

(25) If we put on one side of a road of length 12 km some light poles from the beginning to the end of the road, where the distance between each two consecutive poles is $\frac{1}{2}$ km, then the number of poles is

- a** 12 **b** 24 **c** 25 **d** 23

(26) The decimal that lies between 0.07 and 0.08 is

- a** 0.00075 **b** 0.0075 **c** 0.075 **d** -0.75

(27) The square of double the number $\frac{1}{2}$ is

a $\frac{1}{4}$

b $\frac{1}{8}$

c 1

d 2

(28) $\frac{1}{x} + \frac{1}{y} + \frac{1}{xy} = \frac{\dots}{xy}$

a 2

b 3

c $x+y+1$

d $x+y$

(29) $[1,6] - [1,6[= \dots\dots\dots$

a {1}

b {9}

c {6}

d $]1,6[$

(30) $\mathbb{Z}^- \cup \mathbb{N} = \dots\dots\dots$

a $\emptyset$

b $\mathbb{N}$

c $\mathbb{Z}$

d $\mathbb{R}$

FOURTH: ACCUMULATIVE SKILLS ALGEBRA

1.	D	2.	C	3.	B	4.	D
5.	C	6.	D	7.	C	8.	D
9.	B	10.	C	11.	C	12.	C
13.	A	14.	B	15.	D	16.	C
17.	C	18.	A	19.	A	20.	C
21.	D	22.	D	23.	A	24.	D
25.	C	26.	C	27.	C	28.	C
29.	C	30.	C				

FIRST: ALGEBRA

Choose the correct answer:

1.	D	2.	A	3.	A	4.	B
5.	C	6.	D	7.	A	8.	D
9.	A	10.	B	11.	A	12.	A
13.	C	14.	A	15.	C	16.	D
17.	C	18.	C	19.	C	20.	C
21.	B	22.	D	23.	A	24.	A
25.	C	26.	C	27.	C	28.	C
29.	A	30.	A	31.	A	32.	D
33.	D	34.	D	35.	B	36.	D
37.	B	38.	A	39.	A	40.	A
41.	C	42.	C	43.	C	44.	C
45.	A	46.	A	47.	B	48.	D
49.	A	50.	B	51.	D	52.	A
53.	A	54.	B	55.	D	56.	C
57.	A	58.	A	59.	A	60.	A
61.	B	62.	A	63.	C	64.	D
65.	C	66.	A	67.	C	68.	C
69.	B	70.	C	71.	C	72.	D
73.	C	74.	A	75.	B	76.	D
77.	A	78.	D	79.	C	80.	B
81.	B	82.	C	83.	A	84.	C
85.	C	86.	C	87.	D	88.	B
89.	A	90.	B	91.	C	92.	C
93.	D	94.	D	95.	A	96.	C
97.	B	98.	D	99.	C	100.	C
101.	D	102.	C	103.	C	104.	A

SECOND: GEOMETRY

Choose the correct answer:

1.	A	2.	B	3.	C	4.	C
5.	B	6.	C	7.	C	8.	B
9.	B	10.	B	11.	C	12.	B
13.	D	14.	D	15.	B	16.	D
17.	D	18.	B	19.	D	20.	A
21.	C	22.	D	23.	C	24.	B
25.	C	26.	B	27.	D	28.	A
29.	C	30.	C	31.	A	32.	C
33.	B	34.	B	35.	D	36.	B
37.	B	38.	A	39.	B	40.	B
41.	D	42.	A	43.	D	44.	B
45.	C	46.	B	47.	B	48.	B
49.	D	50.	B	51.	B	52.	A
53.	B	54.	A	55.	B	56.	C
57.	B	58.	B	59.	B		

THIRD: ACCUMULATIVE SKILLS GEOMETRY

1.	D	2.	C	3.	D	4.	C
5.	B	6.	C	7.	B	8.	B
9.	D	10.	D	11.	A	12.	C
13.	A	14.	D	15.	D	16.	A
17.	A	18.	A	19.	C	20.	C
21.	A	22.	A	23.	B	24.	D
25.	C	26.	C	27.	B	28.	B
29.	D	30.	C	31.	D	32.	B
33.	B	34.	C	35.	B	36.	A
37.	C	38.	D				

حمل الآن

مجاناً وحصرياً

المراجعة رقم (3)

الترم الاول



Unit 1

Answer the following :

- 1 If $X = \{2, 5\}$, $Y = \{3, 2\}$, $Z = \{3\}$, find :
- $Y \times X$ ■ Y^2 ■ Z^2 ■ $(X \cap Y) \times (Y - Z)$
- $n(X^2)$ ■ $n(Z^2)$ ■ $n(Y \times Z)$
- 2 If $X \times Y = \{(1, 1), (1, 5), (1, 3), (4, 1), (4, 3), (4, 5)\}$
Find : $Y \times X$, X , X^2
- 3 If $X - Y = \{3\}$, $Y - X = \{1, 5\}$, $X \cap Y = \{6\}$, find :
- 1 X, Y 2 $(X \cap Y) \times X$

Choose the correct answer

- 4 If $n(X) = 3$, $n(X \times Y) = 12$, then $n(Y) = \dots\dots\dots$
- (a) 4 (b) 9 (c) 15 (d) 36
- 5 If $n(X^2) = 4$, $n(X \times Y) = 6$, then $n(Y^2) = \dots\dots\dots$
- (a) 4 (b) 9 (c) 16 (d) 12
- 6 If $n(X) = 2$, $n(Y^2) = 9$, then $n(X \times Y) = \dots\dots\dots$
- (a) 6 (b) 18 (c) 11 (d) 7
- 7 If $X = \{1\}$, $Y = \{3\}$, then $n(X \times Y) = \dots\dots\dots$
- (a) $\{(1, 3)\}$ (b) $\{(3, 1)\}$ (c) 3 (d) 1

Unit 1

Choose the correct answer

- 8 If $X = \{3\}$, $n(Y) = 5$, then $n(X \times Y) = \dots\dots\dots$
 (a) 1 (b) 5 (c) 8 (d) 15
- 9 If $X = \{3\}$, then $X^2 = \dots\dots\dots$
 (a) 9 (b) $(3, 3)$ (c) $\{9\}$ (d) $\{(3, 3)\}$
- 10 If $X \times Y = \{(2, 3)\}$, then $X^2 = \dots\dots\dots$
 (a) $\{(4, 9)\}$ (b) $\{(4, 3)\}$ (c) $\{(2, 2)\}$ (d) $\{(2, 9)\}$
- 11 If $X \times Y = \{(1, 2), (1, 3), (1, 4)\}$, then $n(X) + n(Y^2) = \dots\dots\dots$
 (a) 3 (b) 4 (c) 6 (d) 10
- 12 If $a \in X^2$ where $X = \{x : 5 < x < 7, x \in \mathbb{N}\}$, then a is $\dots\dots\dots$
 (a) 36 (b) $\{36\}$ (c) $(6, 6)$ (d) $[5, 7]$
- 13 If $X = \{1, 2\}$, then $X \times \emptyset = \dots\dots\dots$
 (a) X (b) $\emptyset$ (c) $\{0\}$ (d) $\{(1, 0), (2, 0)\}$
- 14 If X is a non-empty set , $n(X) = n(X \times Y)$, then $n(Y) = \dots\dots\dots$
 (a) 1 (b) 2 (c) 3 (d) 4
- 15 If $\{2\} \times \{x, y\} = \{(2, 4), (2, 3)\}$, then $x - y = \dots\dots\dots$
 (a) 1 (b) -1 (c) ± 1 (d) zero
- 16 If $(3, 5) \in \{3, 6\} \times \{x, 8\}$, then $x = \dots\dots\dots$
 (a) 8 (b) 6 (c) 5 (d) 3

Unit 1

Choose the correct answer

- 17 If $X = \{1, 2\}$ and $Y = \{3, 4\}$, then
 $(3, 4) \in \dots\dots\dots$ $(3, 2) \in \dots\dots\dots$
 $(2, 1) \in \dots\dots\dots$ $(1, 4) \in \dots\dots\dots$
 (a) $Y \times X$ (b) X^2 (c) $X \times Y$ (d) Y^2
- 18 If $X = [-4, 2]$, $Y = [-2, 5]$, then $(3, -3) \in \dots\dots\dots$
 (a) $X \times Y$ (b) $Y \times X$ (c) X^2 (d) Y^2
- 19 If $(X - 1, 11) = (8, y + 3)$, then $\sqrt{X + 2y} = \dots\dots\dots$
 (a) 5 (b) ± 5 (c) $\sqrt{17}$ (d) 25
- 20 If $(X - 3, 2^y) = (2, 16)$, then $(y, X) = \dots\dots\dots$
 (a) (1, 4) (b) (5, 4) (c) (4, 1) (d) (4, 5)
- 21 If $(2^X, 27) = (32, y^3)$, then $\frac{X}{y} = \dots\dots\dots$
 (a) $\frac{3}{5}$ (b) $\frac{5}{3}$ (c) $\frac{32}{27}$ (d) $\frac{27}{32}$
- 22 If $(3^X, \sqrt{y}) = (1, 4)$, then $X + y = \dots\dots\dots$
 (a) 2 (b) 3 (c) 16 (d) 17
- 23 If $(X + 5, 8) = (1, 6y + X)$, then $y = \dots\dots\dots$
 (a) 5 (b) 6 (c) 2 (d) 12
- 24 If $(X^3, y^2) = (1, 4)$, $X > y$, then $Xy = \dots\dots\dots$
 (a) 4 (b) 2 (c) -2 (d) -4

Unit 1

Choose the correct answer

- 25 The point $(1, -5)$ lies in the quadrant.
 (a) first (b) second (c) third (d) fourth
- 26 The point $(3, 4)$ lies in the quadrant.
 (a) first (b) second (c) third (d) fourth
- 27 Which of the following points lies on the second quadrant ?
 (a) $(3, 2)$ (b) $(-4, 5)$ (c) $(-3, -2)$ (d) $(2, -3)$
- 28 The ordered pair (x^2, y^2) , where $x \neq 0, y \neq 0$ lies in the quadrant.
 (a) first (b) second (c) third (d) fourth
- 29 If $x \in \mathbb{R}_-$, then the point $(-x, \sqrt[3]{x})$ lies in the quadrant.
 (a) first (b) second (c) third (d) fourth
- 30 If the point (x, y) lies in the third quadrant, then the point (x^3, y^2) lies in the quadrant.
 (a) first (b) second (c) third (d) fourth
- 31 The point $(x - 3, 2 - x)$ lies in the fourth quadrant, then $x =$
 (a) 4 (b) 3 (c) 2 (d) 1
- 32 If $b < 3$, then the point $(5, b - 3)$ lies in the quadrant.
 (a) first (b) second (c) third (d) fourth
- 33 If $(|x|, 4) = (3, y^2)$ and the point (x, y) lies in the second quadrant, then $x + y =$
 (a) 7 (b) 1 (c) -1 (d) -7

Unit 1

Choose the correct answer

- 34 If (X, y) lies in the second quadrant, then Xy zero
 (a) = (b) > (c) < (d) $\geq$
- 35 If the point $(a, 3 - a)$ lies on the X -axis, then $a =$
 (a) zero (b) 3 (c) -3 (d) 5
- 36 If $(k^2 - 4, k)$ lies on the negative part of y -axis, then $k =$
 (a) ± 2 (b) 4 (c) -2 (d) 2
- 37 If $X = \{1, 2, 3, 4\}$, which of the following arrow diagrams represents a function on the set X ?

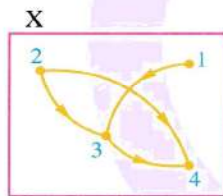


Fig. (1)

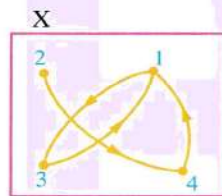


Fig. (2)

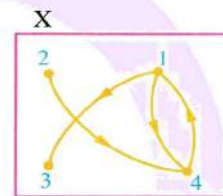
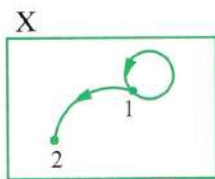
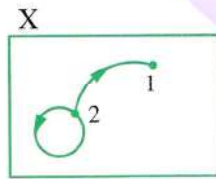


Fig. (3)

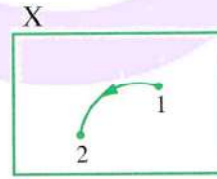
- 38 If $X = \{1, 2\}$, then the arrow diagram that represents a function on X is



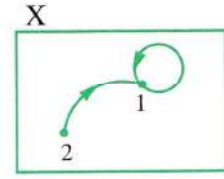
(a)



(b)

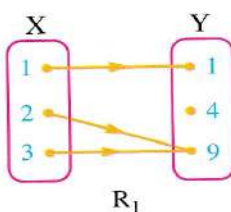
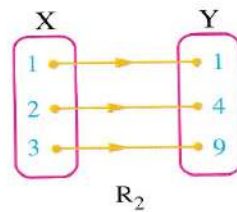
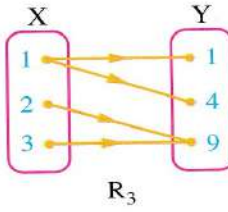
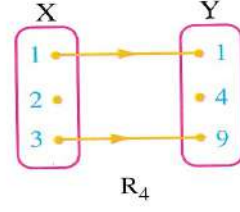


(c)



(d)

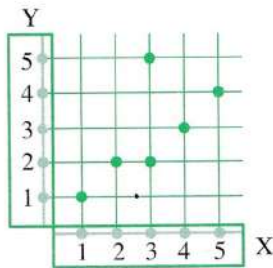
- 39 Which of the following relations represents a function from X to Y ?
 If the relation represents a function, then find the function range:

 R_1  R_2  R_3  R_4

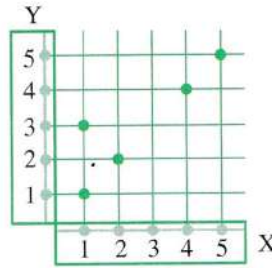
Unit 1

Choose the correct answer

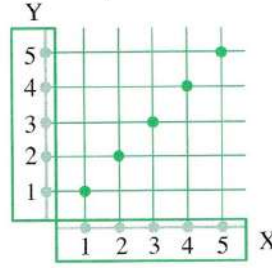
- 40 Which of the following relations is a function from X to Y ?



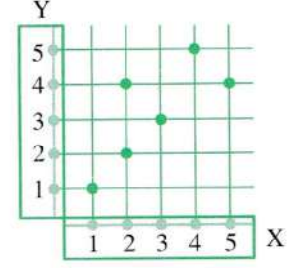
(a)



(b)



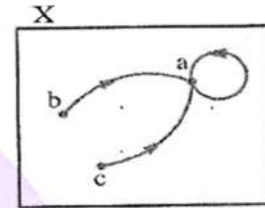
(c)



(d)

- 41 The opposite diagram represents a function on X , its range is

- (a) {a} (b) {a , b , c}
(c) {a , b} (d) {b , c}



- 42 If $X = \{2, 4, 6\}$, $n(Y) = 4$ and the function $f : X \longrightarrow Y$, $f(x) = x^2 - 1$, then Y may be

- (a) {3 , 7 , 13} (b) {3 , 15 , 25 , 45}
(c) {3 , 15 , 35} (d) {3 , 15 , 25 , 35}

- 43 If the function $f : X \longrightarrow Y$, then the range of the function $f \subset$

- (a) $X \times Y$ (b) X (c) $Y \times X$ (d) Y

- 44 If $\mathbb{R}$ is a function on X where $X = \{1, 3, 5\}$, and $\mathbb{R} = \{(a, 3), (b, 1), (1, 5)\}$, then $a + b =$

- (a) 4 (b) 6 (c) 8 (d) 2

- 45 The function f where $f(x) = x^4 - 2x^3 + 7$ is a polynomial of degree.

- (a) first (b) second (c) third (d) fourth

Unit 1

Choose the correct answer

- 46 The function $f : \mathbb{R} \longrightarrow \mathbb{R}$ where $f(x) = x(2x^3 + 5x)$ is polynomial of the degree.
- (a) first (b) second (c) third (d) fourth
- 47 The function $d : d(x) = x^2 - (x - 3)^2$ is of the degree.
- (a) zero (b) first (c) second (d) third
- 48 The function $f : \mathbb{R} \longrightarrow \mathbb{R}$ where $f(x) = ax + b$ represents a linear function on condition $a \in$
- (a) $\mathbb{R}$ (b) $\mathbb{R}_+$ (c) $\mathbb{R} - \{0\}$ (d) $\mathbb{R}_-$
- 49 If $f(x) = nx^2 + 2x^n - 3$, then the set of possible values of n that make f is a function of second degree is
- (a) $\{2, 3\}$ (b) $\{1, -1\}$ (c) $\{2, 1, 0\}$ (d) $\{2, 1\}$
- 50 If $f : f(x) = (2a - 2)x^3 + 3x^2 + x + 2$ is a polynomial function of the second degree, then $a =$
- (a) zero (b) 2 (c) 3 (d) 1
- 51 Which of the following functions is polynomial ?
- (a) $f(x) = x^3 + x^2 + 2$ (b) $f(x) = x^3 + \frac{1}{x} + 7$
- (c) $f(x) = x^2 + \sqrt{x} + 8$ (d) $f(x) = x\left(x + \frac{1}{x} - 2\right)$
- 52 The following functions are polynomial functions of the first degree except $f : f(x) =$
- (a) $\frac{3}{5}x + 2$ (b) $\sqrt{2}x + 1$ (c) $x + (x + 5)$ (d) $x\left(\frac{1}{x} + 1\right)$

Unit 1

Choose the correct answer

- 53 $f(x) = 5$ is represented by a straight line parallel to the x -axis and passing through the point
- (a) $(0, 5)$ (b) $(5, 0)$ (c) $(5, -5)$ (d) $(0, 0)$
- 54 If $f(x) = 3$, then $f(2) + f(-2) = \dots\dots\dots$
- (a) zero (b) 4 (c) -4 (d) 6
- 55 If f is a function such that $f: \mathbb{R} \rightarrow \mathbb{R}$, $f(x) = 3$, then $\frac{f(6)}{f(\text{zero})} = \dots\dots\dots$
- (a) 6 (b) 1 (c) 3 (d) undefined
- 56 If $f(3x) = 6$, then $f(-2) = \dots\dots\dots$
- (a) -12 (b) -3 (c) 6 (d) -18
- 57 If $f(x) = 7x - 1$, then $f(1) = \dots\dots\dots$
- (a) 7 (b) 6 (c) -1 (d) 3
- 58 If $f(x + 3) = x - 3$, then $f(7) = \dots\dots\dots$
- (a) 4 (b) 1 (c) 7 (d) 10
- 59 The function $f: f(x) = 3x$ is represented by a straight line passing through the point
- (a) $(0, -3)$ (b) $(0, 0)$ (c) $(3, 0)$ (d) $(3, 3)$
- 60 If the straight line representing the function $f: f(x) = 2x - a$ passes through the origin point, then $a = \dots\dots\dots$
- (a) -2 (b) 2 (c) zero (d) 3

Unit 1

Choose the correct answer

- 61 The linear function $f : f(x) = 2x - 1$ is represented by a straight line cutting y-axis at the point
- (a) (0 , 1) (b) (0 , - 1) (c) (1 , 0) (d) (- 1 , 0)
- 62 The linear function defined by the rule $f(x) = 3x + 6$ is represented by a straight line intersecting the x-axis at the point
- (a) (0 , - 2) (b) (- 2 , 0) (c) (0 , - 6) (d) (- 6 , 0)
- 63 If the point (2 , a - 1) lies on the straight line which represents the function $f : f(x) = 4x - 5$, then a =
- (a) 4 (b) 1 (c) 3 (d) 2
- 64 If (2 , b) $\in$ the set of the function f where $f(x) = 3x - 6$, then b =
- (a) zero (b) 7 (c) 9 (d) 2
- 65 If $f : f : \mathbb{R} \longrightarrow \mathbb{R}$ where $f(x) = x^{k-2} + 3$ and $f(2) = 11$, then k =
- (a) 5 (b) 3 (c) 2 (d) - 3
- 66 If the point (a , 4) is one of the points of the function $f : \mathbb{R} \longrightarrow \mathbb{R}$ where $f(x) = 2x + b$, then 6 a + 3 b =
- (a) 12 (b) 9 (c) 6 (d) 3
- 67 If the point (3 , 2) is the vertex of the curve of the quadratic function f , then the equation of the line of symmetry is
- (a) $x = 3$ (b) $x = 2$ (c) $y = 3$ (d) $y = - 3$
- 68 The equation of the axis of symmetry of the curve of the function $f : f(x) = x^2$ is
- (a) $x = 1$ (b) $x = 0$ (c) $y = 1$ (d) $y = 0$

Unit 1

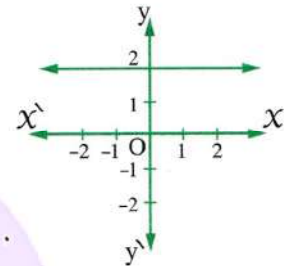
Choose the correct answer

- 69 The vertex of the curve of the function $f : f(x) = 2x^2 - 4x + 5$ is
 (a) $(-1, 11)$ (b) $(1, 3)$ (c) $(2, 5)$ (d) $(3, 11)$

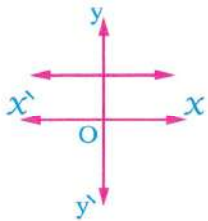
- 70 The maximum value of the function $f : f(x) = -2x^2 + 4x + 3$ is
 (a) -1 (b) 1 (c) 3 (d) 5

- 71 The opposite figure represents the function $f : \mathbb{R} \longrightarrow \mathbb{R}$ where

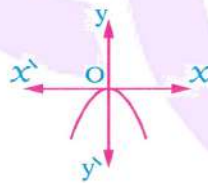
- (a) $f(x) = 2$
 (b) $f(x) = -2$
 (c) $f(x) = x + 2$
 (d) $f(x) = x - 2$



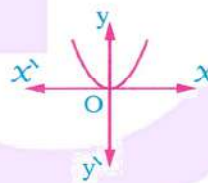
- 72 The graph of the function $f : f(x) = x^2 - 2x + 1$ is the graph number



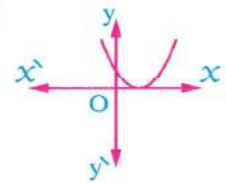
(a)



(b)



(c)

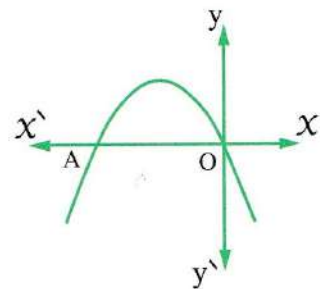


(d)

- 73 In the opposite figure :

The curve of a quadratic function , A $(-4, 0)$
 , then the equation of the axis
 of symmetry is $x = \dots\dots\dots$

- (a) 1 (b) -1 (c) -2 (d) 0



- 74 If $f(x) = x^2$, $x \in [-2, 2]$, then $f(x) \in \dots\dots\dots$

- (a) $]0, 4]$ (b) $]0, 4[$ (c) $[0, 4]$ (d) $[-4, 4[$

Unit 1

Answer the following

- 75 If $X = \{2, 5, 7\}$, $Y = \{1, 3, 6, 11\}$ and R is a relation from X to Y where " $a R b$ " means " $a + b = 8$ " for each $a \in X$, $b \in Y$

1 Write R and represent it by an arrow diagram.

2 Show that R is a function and find its range.

- 76 If $X = \{1, 2, 3\}$, $Y = \{2, 3, 7\}$ and R is a relation from X to Y , where " $a R b$ " means " $a + b = \text{a prime number}$ " for each $a \in X$, $b \in Y$

1 Write R and represent it by an arrow diagram. Is R a function ?

2 If $2 a R 3$, then find the value of a

- 77 If $X = \{-2, -1, 0, 1, 2\}$, R is a relation on the set X where " $a R b$ " means " a is the additive inverse of the number b " for every $a \in X$ and $b \in X$, state R , then represent it by an arrow diagram , and mention giving reasons if R represents a function or not.

- 78 If $X = \{-1, \text{zero}, 2, 3\}$, $Y = \{1, \text{zero}, \frac{1}{2}, \frac{1}{3}\}$ and R is a relation from X to Y where " $a R b$ " means "The number a is the multiplicative inverse of the number b " for each $a \in X$, $b \in Y$, write R , and show if R is a function or not ? And why ?

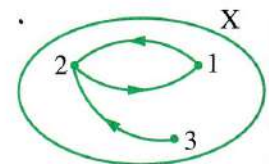
- 79 If $X = \{2, 3, 5\}$, $Y = \{y : y \in \mathbb{N}, y \text{ is an even number } \leq 10\}$ and R is a relation from X to Y where " $a R b$ " means " $2a = b$ " for all $a \in X$, $b \in Y$
Write R and Show that R is a function.

- 80 If $X = \{2, 3, 4\}$, $Y = \{6, 8, 10, 11, 15\}$ and R is a relation from X to Y , where " $a R b$ " means " a divides b "
for each $a \in X$, $b \in Y$ Write the relation R

Unit 1

Answer the following

- 81 If $X = \{1, 2, 4, 6, 10\}$ and R is a relation on X where " $a R b$ " means " a is a multiple of b " for each $a \in X, b \in X$. Write R .
- 82 If $X = \{0, 1, 2, 3\}$, $Y = \{-1, 0, 1, 4, 9\}$ and $R : X \longrightarrow Y$ where " $a R b$ " means " $a = \sqrt{b}$ " for each $a \in X$ and $b \in Y$. Write R and represent it by an arrow diagram.
Is R a function or not? giving reason.
- 83 If $X = \{-1, 1, 2\}$, $Y = \{2, 4, 6, 8\}$ and R is a relation from X to Y where " $a R b$ " means " $b = 2a + 4$ " for each $a \in X$ and $b \in Y$.
Write R and represent it by an arrow diagram. Is R a function? and Why?
- 84 If f is a function from the set X to the set Y , then Y is called
(a) the domain of the function. (b) the codomain of the function.
(c) the range of the function. (d) the rule of the function.
- 85 If the set of the function $f = \{(1, 3), (2, 5), (3, 7), (4, 9), (5, 11)\}$, write :
1 The domain of the function f
2 The range of the function f
3 The rule of the function f
- 86 If $X = \{1, 2, 3\}$ and R is a relation on X as shown in the opposite arrow diagram, write R and show that R is a function on X and state the range of it.
- 87 If $X = \{0, 1, 3\}$, $Y = \{1, 2, 3, 4, 5, 7\}$ and the function $f : X \longrightarrow Y$ where $f(x) = 5 - x$
1 Find the range of f 2 Draw a Cartesian diagram for the function f



Unit 1

Answer the following

89 If $f(x) = x^2 + 5$, $h(x) = 7$, find the value of : $f(-1) + h(-7)$

90 If $d(x) = 2x + 5$, $r(x) = x - 6$, prove that : $d(2) + 3r(3) = 0$

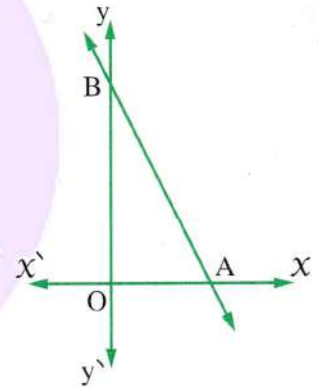
91 If $f(x) = 4x + b$ and $f(3) = 15$, find the value of : b

92 If $f : \mathbb{R} \longrightarrow \mathbb{R}$ is represented by a straight line cutting y-axis at $(b, 3)$ where $f(x) = 6x - a$, find the value of : $2a + 7b$

93 The opposite figure represents the function f where $f(x) = 4 - 2x$

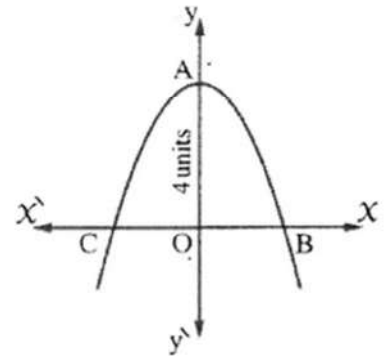
Find :

- 1 The coordinates of the two points A and B
- 2 The area of $\triangle AOB$



94 The opposite figure represents the curve of the function $f : f(x) = m - x^2$
If $OA = 4$ units , then find :

- 1 The value of m
- 2 The coordinates of the two points B and C
- 3 The area of the triangle whose vertices are A , B , C



Unit 1

Answer the following

- 95 Represent graphically the function $f : f(x) = x - 2$, then find the points of intersection with the coordinates axes.
- 96 Represent graphically the function $f : f(x) = (x - 3)^2$, $x \in [0, 6]$, from the graph deduce the vertex of the curve, the minimum value of the function and the equation of the axis of symmetry.
- 97 Represent graphically the function $f : f(x) = 2 - x^2$, $x \in [-3, 3]$ and from the graph deduce :
- 1 The coordinates of the vertex of the curve.
 - 2 The equation of the axis of symmetry.
 - 3 The maximum value of the function.
 - 3 The maximum value of the function.

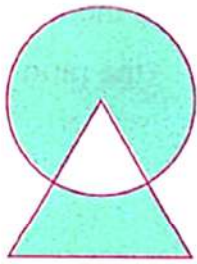
شرح خطوات الحل على قناة



Math For Kids: Hoda Ismail

Unit 2

Choose the correct answer

- 1 If $\frac{a}{b} = \frac{2}{3}$, $\frac{a}{c} = \frac{4}{5}$, then $b : c = \dots\dots\dots$
 (a) 3 : 4 (b) 5 : 6 (c) 6 : 5 (d) 4 : 3
- 2 The ratio between the area of a square of side length ℓ and the area of a square of side length 3ℓ equals $\dots\dots\dots$
 (a) 1 : 3 (b) 3 : 1 (c) 1 : 9 (d) 9 : 1
- 3 In the opposite figure :
 Alaa shaded $\frac{5}{6}$ the area of the circle , $\frac{2}{3}$ the area of the triangle.
 the ratio between the area of the circle and the area of the triangle.
 (a) 3 : 5 (b) 6 : 5 (c) 2 : 1 (d) 1 : 2
- 
- 4 If $2a + 3b = \text{zero}$, then $\frac{a}{b} = \dots\dots\dots$
 (a) $-\frac{3}{2}$ (b) $-\frac{2}{3}$ (c) $\frac{3}{2}$ (d) $\frac{2}{3}$
- 5 If $\frac{5a - 7b}{2a + 3b} = 0$, then $\frac{b}{a} = \dots\dots\dots$
 (a) $\frac{5}{7}$ (b) $\frac{7}{5}$ (c) $\frac{3}{10}$ (d) $\frac{10}{3}$
- 6 If $2x = 7y$, then $\left(\frac{x}{y}\right)^{-1} = \dots\dots\dots$
 (a) $\frac{2}{7}$ (b) $\frac{7}{2}$ (c) $\frac{49}{4}$ (d) $\frac{4}{49}$
- 7 If $4x^2 = 9y^2$, then $\frac{x}{y} = \dots\dots\dots$
 (a) $\frac{9}{4}$ (b) $\frac{3}{2}$ (c) $\pm \frac{2}{3}$ (d) $\pm \frac{3}{2}$
- 8 If $3a = \frac{5}{6}b$, then $\frac{a}{b} = \dots\dots\dots$
 (a) $\frac{18}{5}$ (b) $\frac{15}{6}$ (c) $\frac{6}{15}$ (d) $\frac{5}{18}$

Unit 2

Choose the correct answer

- 9 If $4x = 5y$, then $\frac{5y}{4x} = \dots\dots\dots$
 (a) 1 (b) 2 (c) 3 (d) 4
- 10 If $3a = 5b$, then $\frac{3a}{b} = \dots\dots\dots$
 (a) 3 (b) 5 (c) $\frac{3}{5}$ (d) $\frac{5}{8}$
- 11 If $\frac{a}{b} = \frac{2}{3}$, then $3a - 2b + 3 = \dots\dots\dots$
 (a) 3 (b) 2 (c) 1 (d) zero
- 12 If $\frac{3a}{5b} = \frac{1}{2}$, then $\frac{a}{b} = \dots\dots\dots$
 (a) $\frac{6}{5}$ (b) $\frac{5}{6}$ (c) $\frac{2}{3}$ (d) $\frac{3}{2}$
- 13 If $2a = 3b$, then $\frac{3a}{2b} = \dots\dots\dots$
 (a) $\frac{3}{2}$ (b) $\frac{2}{3}$ (c) $\frac{9}{4}$ (d) $\frac{4}{9}$
- 14 If a, b, c and d are proportional quantities, then
 (a) $\frac{b}{d} = \frac{a}{c}$ (b) $\frac{a}{c} = \frac{d}{b}$ (c) $\frac{b}{c} = \frac{a}{d}$ (d) $ab = cd$
- 15 If $\frac{a}{b} = \frac{c}{d}$ and $a = cm$, then $b = \dots\dots\dots$ "where $m \in \mathbb{R}^*$ "
 (a) ac (b) ad (c) dm (d) dc
- 16 If $\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = m$ (where $m \in \mathbb{R}^*$), then $\frac{ace}{bdf} = \dots\dots\dots$
 (a) m (b) $3m$ (c) m^3 (d) $3m^3$
- 17 If $a, b, 2, 3$ are proportional quantities, then $\frac{b}{a} = \dots\dots\dots$
 (a) $\frac{3}{2}$ (b) $\frac{2}{3}$ (c) $\frac{1}{3}$ (d) $\frac{1}{2}$

Unit 2

Choose the correct answer

- 18 If a , x , b , $2x$ are proportional, then $\frac{a}{b} = \dots\dots\dots$
 (a) 2 (b) $\frac{1}{2}$ (c) $\frac{1}{3}$ (d) $\frac{1}{4}$
- 19 If x , 3, 4 and 6 are proportional, then $x = \dots\dots\dots$
 (a) 0 (b) 1 (c) 2 (d) 3
- 20 If 3, $a - 1$, $a + 1$ and 5 are proportional, then $a = \dots\dots\dots$
 (a) 3 (b) 4 (c) ± 3 (d) ± 4
- 21 If $\frac{a}{b} = \frac{c}{d} = \frac{3}{5}$, then $\frac{a+c}{b+d} = \dots\dots\dots$
 (a) $\frac{5}{3}$ (b) $\frac{3}{5}$ (c) $\frac{6}{5}$ (d) $\frac{5}{6}$
- 22 If $\frac{a}{5} = \frac{b}{3} = \frac{c}{4} = \frac{a+b+c}{x}$, then the value of $x = \dots\dots\dots$
 (a) 3 (b) 4 (c) 5 (d) 6
- 23 If $\frac{x}{5} = \frac{y}{4} = \frac{x+2y}{k}$, then $k = \dots\dots\dots$
 (a) 8 (b) 9 (c) 13 (d) 14
- 24 If $\frac{a}{2} = \frac{b}{3} = \frac{c}{5}$, then each ratio is equal to $\dots\dots\dots$
 (a) $\frac{a+b+c}{3}$ (b) $\frac{a+2b-c}{3}$ (c) $\frac{a-b+c}{10}$ (d) $\frac{a-b}{5}$
- 25 The middle proportional between a and c is $\dots\dots\dots$
 (a) $\sqrt{a+c}$ (b) $\frac{a+c}{2}$ (c) $\pm\sqrt{ac}$ (d) ac
- 26 The proportional mean between $(x-2)$ and $(x+2)$ is $\dots\dots\dots$
 (a) $\sqrt{x+2}$ (b) $x^2 - 4$ (c) $\pm\sqrt{x^2 - 4}$ (d) $\sqrt{x^2 - 4}$

Unit 2

Choose the correct answer

- 27 The middle proportional between 3 , 27 is
 (a) 9 (b) ± 9 (c) 81 (d) ± 81
- 28 The third proportional of the two numbers 3 and 6 is
 (a) $\frac{1}{2}$ (b) 9 (c) 2 (d) 12
- 29 If 3 , x and 12 are three proportional quantities , then $x =$
 (a) 15 (b) -6 (c) 6 (d) ± 6
- 30 If 3 , 6 and x are proportional quantities , then $x =$
 (a) 9 (b) 12 (c) 15 (d) 18
- 31 If 2 , 6 and $x + 15$ are proportional , then $x =$
 (a) 1 (b) 2 (c) 3 (d) 4
- 32 If a , 2 , 4 and b are in continued proportion , then $a + b =$
 (a) 2 (b) 4 (c) 6 (d) 9
- 33 If 7 , x , $\frac{1}{y}$ are in continued proportion , then $x^2 y =$
 (a) 5 (b) 9 (c) 7 (d) 12
- 34 If $\frac{a}{b} = \frac{b}{c} = 2$, then $\frac{a}{c} =$
 (a) 2 (b) 4 (c) 6 (d) 8
- 35 If $\frac{a}{b} = \frac{b}{c} = \frac{c}{3} = 2$, then a =
 (a) 54 (b) 24 (c) 18 (d) 6
- 36 The number if added to 1 , 3 and 6 they become in continued proportion is
 (a) 1 (b) 2 (c) 3 (d) 4

Unit 2

Choose the correct answer

- 37 If a , b , c and d are in continued proportion, and $a + b + c = 5$, $b + c + d = 7$, then $\frac{a}{b} = \dots\dots\dots$
- (a) $\frac{5}{7}$ (b) $\frac{7}{5}$ (c) $-\frac{5}{7}$ (d) $-\frac{7}{5}$
- 38 If y varies directly as x , then $\dots\dots\dots$
- (a) $y = m + x$ (b) $y = mx$ (c) $m = xy$ (d) $y = \frac{m}{x}$
- 39 If y varies inversely as x , then $\dots\dots\dots$
- (a) $y = x$ (b) $y = mx$ (c) $x = my$ (d) $y = \frac{m}{x}$
- 40 If y varies directly with x , and $x = 3$ when $y = 2$, then the constant proportional = $\dots\dots\dots$
- (a) $\frac{2}{3}$ (b) 2 (c) 3 (d) 6
- 41 If y varies inversely with x and $x = \sqrt{3}$ when $y = \frac{2}{\sqrt{3}}$, then the constant proportional equals $\dots\dots\dots$
- (a) $\frac{1}{2}$ (b) $\frac{2}{3}$ (c) 2 (d) 6
- 42 If $xy = 7$, then $y \propto \dots\dots\dots$
- (a) x (b) $\frac{1}{x}$ (c) $7x$ (d) $\frac{x}{7}$
- 43 If $xy = 5$, then y varies inversely as $\dots\dots\dots$
- (a) x (b) $\frac{1}{x}$ (c) $\frac{5}{x}$ (d) $5 + x$
- 44 If $\frac{x}{3} = \frac{5}{y}$, then $x \propto \dots\dots\dots$
- (a) y^2 (b) y (c) $\frac{1}{y}$ (d) $5y$
- 45 If $y \propto \frac{1}{\sqrt{x}}$, then x varies $\dots\dots\dots$
- (a) directly as y^2 (b) inversely as y^2 (c) inversely as y (d) inversely as $\sqrt{y}$

Unit 2

Complete the following

46 If $\frac{x_1}{x_2} = \frac{y_1}{y_2}$, then $y \propto \dots\dots\dots$

- (a) x (b) $\frac{1}{x}$ (c) x^2 (d) $\frac{1}{x^2}$

47 If x and y are two variables , $\frac{x_1 y_1}{x_2 y_2} = 1$, then $y \propto \dots\dots\dots$

- (a) x (b) $\frac{1}{x}$ (c) x^2 (d) $\frac{1}{x^2}$

48 If $y \propto x$, $y \propto \frac{1}{z}$, then $y \propto \dots\dots\dots$

- (a) $\frac{x}{z}$ (b) $\frac{z}{x}$ (c) xz (d) $x + z$

49 The relation which represents a direct variation between y and x is $\dots\dots\dots$

- (a) $xy = 5$ (b) $y = x + 3$ (c) $\frac{x}{3} = \frac{4}{y}$ (d) $\frac{x}{5} = \frac{y}{2}$

50 The relation which represents an inverse variation between y and x is $\dots\dots\dots$

- (a) $xy = 5$ (b) $y = x + 3$ (c) $\frac{x}{5} = \frac{y}{2}$ (d) $y = 2x$

51 If $y = 3x - 6$, then $y \propto \dots\dots\dots$

- (a) x (b) $3x$ (c) $x - 2$ (d) $3x - 6$

52 If $y^2 + 4x^2 = 4xy$, then $\dots\dots\dots$

- (a) $y \propto x$ (b) $y \propto x^2$ (c) $y \propto \frac{1}{x}$ (d) $y \propto \frac{1}{x^2}$

53 If $x^2 y^2 + \frac{1}{4} = xy$, then $\dots\dots\dots$

- (a) $x \propto y$ (b) $y \propto x$ (c) $2x \propto 5y$ (d) $y \propto \frac{1}{x}$

Unit 2

Complete the following

- 54 Which of the following tables represents a direct variation between x and y ?

x	y
2	9
4	18

(a)

x	y
3	20
5	12

(b)

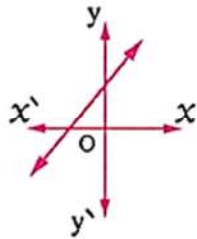
x	y
3	6
-2	-9

(c)

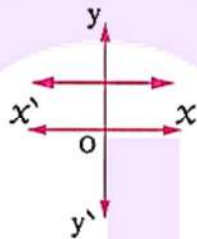
x	y
10	9
5	18

(d)

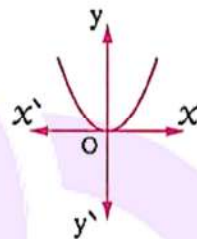
- 55 The graph which represents a direct variation between x and y is



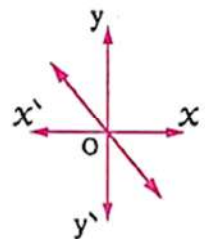
(a)



(b)



(c)



(d)

Answer the following

- If $5a = 3b$, find the value of : $7a + 9b : 4a + 2b$
- If $\frac{2x+3}{y+2} = \frac{3}{2}$, find : The ratio of $\frac{x}{y}$, and the numerical value of $\frac{x+2y}{3y}$
- If $\frac{21x+a}{7x+b} = \frac{a}{b}$, where $x \neq 0$, then find the value of : $\frac{a+2b}{2a}$
- If $\frac{a}{5} = \frac{b}{2} = \frac{c}{3}$, prove that : $\frac{a+b-c}{a-b+c} = \frac{2}{3}$

Unit 2

Answer the following

- 5 If $4a = 3b = 6c$ and $a + b + c = 36$, find the value of each a , b and c
- 6 If $\frac{a}{2} = \frac{b}{3} = \frac{c}{4} = \frac{2a - b + 5c}{3x}$, then find : the value of x
- 7 If $\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = \frac{2}{3}$, and $5a - 3c + e = 18$, find the value of : $5b - 3d + f$
- 8 If $\frac{x}{a+b-c} = \frac{y}{a-b+c} = \frac{z}{b-a+c}$, prove that : $\frac{x+y}{a} = \frac{y+z}{c}$
- 9 If $\frac{a}{2x+y} = \frac{b}{3y-x} = \frac{c}{4x+5y}$, prove that : $\frac{a+2b}{7} = \frac{4b+c}{17}$
- 10 If $\frac{a+b}{5} = \frac{b+c}{3} = \frac{c+a}{6}$, prove that : $\frac{a+b+c}{a} = \frac{7}{4}$
- 11 If $\frac{x+y}{7} = \frac{y+z}{5} = \frac{z+x}{8}$, prove that : $\frac{x+y+z}{x-z} = 5$
- 12 Find the number which if added to each of the two terms of the ratio $3 : 7$, it becomes $1 : 2$
- 13 Find the positive number which if its square is added to the two terms of the ratio $1 : 2$, it becomes $5 : 6$
- 14 Two integers, the ratio between them is $2 : 3$, if you add to the first 7 and subtract from the second 12, the ratio between them becomes $5 : 3$ Find the two numbers.
- 15 Find the number that if it is added to each of the numbers 3, 5, 8 and 12, they become proportional.

Unit 2

Answer the following

- 16 Find the number that if we subtract it from each of the numbers 3 , 7 , 19 , then they become in continued proportion.
- 17 If a , b , c , d are proportional quantities , **prove that** : $\frac{3a-2c}{3b-2d} = \frac{5a+3c}{5b+3d}$
- 18 If a , b , c and d are proportional quantities , **prove that** : $\frac{ac}{bd} = \left(\frac{a-c}{b-d}\right)^2$
- 19 If $\frac{3a-2c}{3b-2d} = \frac{a}{b}$, **prove that** : a , b , c , d are proportional quantities.
- 20 **Find the middle proportional of the two quantities** : $2a^2$, $8b^2$
- 21 If a , 2 , 4 and b are in continued proportion , **find the value of** a and b
- 22 If 4 , a , $\frac{1}{9b^2}$ are in continued proportion , **find** : the values of a b
- 23 If b is the middle proportional between a and c and $a = 4$, $c = 4$, **then find the value of** : $a^2 + b^2 + c^2$
- 24 If $\frac{a^2 + b^2}{b^2} = \frac{b^2 + c^2}{c^2}$, **prove that** b is the middle proportional between a and c where a c is a positive quantity.
- 25 If b is the middle proportional between a , c , **prove that** : $\frac{a^2}{b^2} + \frac{b^2}{c^2} = \frac{2a}{c}$

Unit 2

Answer the following

- 26 If b is the middle proportional between a and c , **prove that** : $\sqrt{\frac{a^2 + b^2}{b^2 + c^2}} = \frac{a}{b}$, where a , b and c are positive numbers.
- 27 If b is the middle proportional between a and c , **prove that** : $\frac{a-b}{a-c} = \frac{b}{b+c}$
- 28 If a , b , c , d are in continued proportion , **prove that** : $\frac{2a+3d}{3a-4d} = \frac{2a^3+3b^3}{3a^3-4b^3}$
- 29 If b is the middle proportional between a , c , **prove that** : $\frac{a+b+c}{a^{-1}+b^{-1}+c^{-1}} = b^2$
- 30 If $y \propto x$ and $y = 14$, when $x = 42$
find : 1 The relation between x and y 2 The value of y when $x = 60$
- 31 If y varies inversely as x , and $y = 3$ when $x = 2$
find : 1 The relation between y and x 2 The value of y when $x = 1.5$
- 32 If $y \propto x^3$ and $y = 64$ as $x = 2$, find the relation between x and y and find the value of y as $x = \frac{1}{2}$
- 33 If $y \propto$ the multiplicative inverse of the expression $\frac{1}{x^2}$, then find the relation between x and y , if $y = 4$ as $x = 3$, then find the value of y as $x = 9$
- 34 If $\frac{21x-y}{7x-z} = \frac{y}{z}$, **prove that** : $y \propto z$
- 35 If $x^4 y^2 - 14x^2 y + 49 = 0$, **prove that** : $y \propto \frac{1}{x^2}$

Unit 2

Answer the following

36 From the data in the following table , answer the following questions :

- 1 Show the type of variation between x and y
- 2 Find the constant of variation.
- 3 Find the value of y at $x = 3$
- 4 Find the value of x at $y = 2\frac{2}{5}$

x	2	4	6
y	6	3	2

- 37 If $y = a - 9$ and $y \propto \frac{1}{x^2}$ and $a = 18$ when $x = \frac{2}{3}$, find the relation between y and x , then deduce the value of y when $x = 1$
- 38 If $x = z + 8$ where z varies inversely as y and $z = 2$ when $y = 3$, find the relation between y and x , **then find** : y when $x = 3$
- 39 If $y = z + 5$, z changes inversely with x and $y = 6$ when $x = 2$, then find the relation between y and x , then find the value of y when $x = 1$
- 40 The number of hours (n) needed for carrying out a work varies inversely as the number of workers (x) who carry out this work. If the work is carried out by 6 workers within 4 hours , what is the needed time for carrying out the work by 8 workers ?

شرح خطوات الحل على قناة



Math For Kids: Hoda Ismail

Unit 3

Choose the correct answer

- 1 The most common value or the most repeated value of a set of values is
(a) the arithmetic mean. (b) the median.
(c) the mode. (d) the range.
- 2 The mode of : 6 , 3 , 8 , 6 , 4 , 6 , 9 is
(a) 6 (b) 3 (c) 8 (d) 9
- 3 If the mode of the values : 11 , 7 , 9 , $X + 2$, 5 is 7 , then $X =$
(a) 3 (b) 5 (c) 7 (d) 9
- 4 The median of the values : 7 , 8 , 9 , 6 and 5 is
(a) 5 (b) 7 (c) 6 (d) 9
- 5 The median of the values : 34 , 23 , 25 , 40 , 22 , 4 is
(a) 22 (b) 23 (c) 24 (d) 25
- 6 If the order of the median of a set of values is the fourth , then the number of these values is
(a) 5 (b) 6 (c) 7 (d) 8
- 7 The mean of : 24 , 10 , 16 , 20 , 30 is
(a) 16 (b) 10 (c) 20 (d) 25
- 8 If the arithmetic mean of the values : 18 , 23 , 29 , k is 18 , then $k =$
(a) 4 (b) 7 (c) 2 (d) 9
- 9 If the arithmetic mean of five numbers is 8 , then the sum of these numbers is
(a) 13 (b) 16 (c) 40 (d) 64
- 10 If the lower limit of a set is 6 and the upper limit is 10 , then its centre is
(a) 4 (b) 6 (c) 10 (d) 8

Unit 3

Choose the correct answer

- 11 One of the measures of dispersion is the
 (a) arithmetic mean. (b) median. (c) range. (d) mode.
- 12 One of the measures of dispersion is the
 (a) arithmetic mean. (b) median. (c) The standard deviation
- 13 The simplest and easiest method of measuring dispersion is
 (a) the arithmetic mean. (b) the range. (c) the mode. (d) the median.
- 14 The commonest measure of dispersion and the most accurate is the
 (a) arithmetic mean. (b) median.
 (c) standard deviation. (d) mode.
- 15 The is the square root of the mean of the squares of the deviations of the values from their mean.
 (a) mode (b) median (c) standard deviation (d) mean
- 16 If $\sum (x - \bar{x})^2 = 36$ of a set of values and the number of these values = 9, then $\sigma =$
 (a) 2 (b) 4 (c) 18 (d) 27
- 17 The set which has more dispersion of the following sets is
 (a) 28 , 17 , 30 , 36 , 20 (b) 20 , 19 , 29 , 37 , 43
 (c) 31 , 35 , 26 , 37 , 41 (d) 25 , 39 , 19 , 5 , 27
- 18 The standard deviation of the values 5 , 5 , 5 , 5 equals
 (a) 0 (b) 5 (c) 6 (d) 2

Unit 3

Choose the correct answer

- 19 If all individuals are equal in values , then
- (a) $\sum x - \bar{x} > 0$ (b) $\sum x - \bar{x} < 0$ (c) $\sigma = 0$ (d) $\bar{x} = 0$
- 20 The difference between the greatest value and the smallest value in a set of individuals is called
- (a) the range. (b) the arithmetic mean.
(c) the median. (d) the standard deviation.
- 21 The range of the values 7 , 3 , 6 , 9 , 5 is
- (a) 3 (b) 4 (c) 6 (d) 12
- 22 If the range of the values 7 , a , 8 , 9 , 5 is 7 , then a =
- (a) 1 (b) 2 (c) 3 (d) 4
- 23 The range of the values : $\sum x + 4$, $\sum x - 3$, $\sum x + 8$, where $\sum x$ is a real number is
- (a) 1 (b) 4 (c) 7 (d) 11
- 24 If 5 is the smallest value of a set of individuals and the range equals 7 , then the greatest value of this set is
- (a) 7 (b) 10 (c) 12 (d) 14
- 25 If 18 is the greatest value of a set of individuals and the range = 6 , then the smallest value is
- (a) 8 (b) 12 (c) 14 (d) 36
- 26 Which of the following values of the number $\sum x$ makes the range of the values $\sum x$, 15 , 20 , 24 equal to 14 ?
- (a) 30 (b) 25 (c) 19 (d) 10

Unit 3

Answer the following

- 1 Calculate the standard deviation of the values : 12 , 13 , 16 , 18 , 21
- 2 The following frequency distribution shows the number of days of the students absentees in a class :

Number of absence days (x)	0	1	2	3	4	Total
Number of students (frequency)	5	7	7	5	6	30

Calculate the mean and the standard deviation.

- 3 Calculate the mean and the standard deviation for the following frequency distribution :

Sets	0 –	4 –	8 –	12 –	16 – 20	Total
Frequency	3	4	7	2	9	25

شرح خطوات الحل على قناة



Math For Kids: Hoda Ismail

Unit 4

Choose the correct answer

- 1 If $\sin X = \frac{1}{2}$, X is an acute angle, then $m(\angle X) = \dots\dots\dots$
 (a) 45° (b) 60° (c) 30° (d) 90°
- 2 If $\cos X = \frac{1}{2}$ where X is an acute angle, then $m(\angle X) = \dots\dots\dots$
 (a) 90° (b) 60° (c) 45° (d) 30°
- 3 If $\sin 2X = \frac{\sqrt{3}}{2}$, then $X = \dots\dots\dots$ (where $2X$ is the measure of an acute angle)
 (a) 20° (b) 30° (c) 45° (d) 60°
- 4 If $\cos 3X = \frac{1}{2}$, $3X$ is the measure of an acute angle, then $X = \dots\dots\dots$
 (a) 20° (b) 30° (c) 45° (d) 60°
- 5 If $\sin 2X = 0.5$ where X is the measure of an acute angle, then $X = \dots\dots\dots$
 (a) 70° (b) 60° (c) 15° (d) 30°
- 6 If $\cos \frac{X}{2} = \frac{1}{2}$ where $\frac{X}{2}$ is an acute angle, then $m(\angle X) = \dots\dots\dots$
 (a) 30° (b) 45° (c) 60° (d) 120°
- 7 If $\tan 3X = \sqrt{3}$, where X is the measure of an acute angle, then $X = \dots\dots\dots$
 (a) 10 (b) 20 (c) 30 (d) 60
- 8 If $\tan (X + 15^\circ) = 1$, where X is the measure of an acute angle, then $X = \dots\dots\dots$
 (a) 60° (b) 45° (c) 30° (d) 15°
- 9 If $\cos (X + 10^\circ) = \frac{1}{2}$ where $(X + 10^\circ)$ is the measure of an acute angle, then $X = \dots\dots\dots$
 (a) 30° (b) 40° (c) 50° (d) 70°

Unit 4

Choose the correct answer

- 10 If $\tan \frac{3X}{2} = 1$ where X is the measure of an acute angle , then $X = \dots\dots\dots$
 (a) 15° (b) 30° (c) 45° (d) 60°
- 11 If $\tan (2X - 5^\circ) = 1$ where X is the measure of an acute angle , then $X = \dots\dots\dots$
 (a) 45° (b) 35° (c) 25° (d) 15°
- 12 If $2 \sin X = \tan 60^\circ$ where X is an acute angle , then $X = \dots\dots\dots$
 (a) 30° (b) 45° (c) 60° (d) 40°
- 13 If $2 \sin X - 1 = 0$, X is the measure of an acute angle , then $X = \dots\dots\dots$
 (a) 60° (b) 90° (c) 45° (d) 30°
- 14 If $2 \cos 2X = 1$, where $2X$ is the measure of an acute angle , then $X = \dots\dots\dots$
 (a) 15° (b) 30° (c) 45° (d) 60°
- 15 $\tan 45^\circ = \dots\dots\dots$
 (a) 1 (b) $2\sqrt{2}$ (c) $\frac{1}{2}$ (d) $\sqrt{2}$
- 16 $2 \sin 30^\circ \tan 60^\circ = \dots\dots\dots$
 (a) $\sqrt{3}$ (b) 3 (c) $\frac{\sqrt{3}}{3}$ (d) $\frac{1}{2}$
- 17 $\sin 30^\circ + \cos 60^\circ = \dots\dots\dots$
 (a) $\frac{1}{4}$ (b) 0 (c) 1 (d) $\frac{\sqrt{3}}{2}$
- 18 If $X = \cos 60^\circ \tan 45^\circ$, then $X^2 = \dots\dots\dots$
 (a) 1 (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{1}{2}$ (d) $\frac{1}{4}$

Unit 4

Choose the correct answer

- 19 $2 \cos^2 30^\circ - 1 = \dots\dots\dots$
 (a) $\cos 60^\circ$ (b) $\sin 60^\circ$ (c) $2 \sin 30^\circ$ (d) $\tan 60^\circ$
- 20 If the straight line : $y = x \sin 30^\circ + c$ passes through the point (4 , 6) , then $c = \dots\dots\dots$
 (a) 4 (b) 6 (c) 8 (d) 2
- 21 If the figure ABCD is a parallelogram , then : $\sin \left(\frac{A+B}{4} \right) = \dots\dots\dots$
 (a) $\frac{1}{2}$ (b) $\frac{\sqrt{2}}{2}$ (c) $\frac{\sqrt{3}}{2}$ (d) $\sqrt{2}$
- 22 If ABCDEF is a regular hexagon , $m(\angle BAC) = x^\circ$, then $\sin x^\circ = \dots\dots\dots$
 (a) $\frac{BC}{AB}$ (b) $\frac{BC}{AC}$ (c) $\frac{\sqrt{3}}{2}$ (d) $\frac{1}{2}$
- 23 If ABC is a right-angled triangle at B , $AB = BC$, then $\tan A = \dots\dots\dots$
 (a) $\frac{1}{3}$ (b) $\sqrt{3}$ (c) 1 (d) $\frac{1}{\sqrt{2}}$
- 24 The tangent of an acute angle of the right isosceles triangle is equal to $\dots\dots\dots$
 (a) $\sqrt{3}$ (b) $\frac{1}{\sqrt{3}}$ (c) 1 (d) $\frac{\sqrt{2}}{2}$
- 25 ΔABC is right-angled at A , if $\tan B = 1$, then $\tan C - \sin C \cos C = \dots\dots\dots$
 (a) zero (b) 1 (c) 2 (d) $\frac{1}{2}$
- 26 If $\cos x = \frac{\sqrt{3}}{2}$, x is the measure of an acute angle , then $\sin 2x = \dots\dots\dots$
 (a) 1 (b) $\frac{\sqrt{3}}{2}$ (c) -2 (d) $\frac{1}{\sqrt{3}}$

Unit 4

Choose the correct answer

- 27 If $\tan X = \frac{1}{\sqrt{3}}$ where X is the measure of an acute angle, then $\tan 2X = \dots\dots\dots$
 (a) $\frac{2}{\sqrt{3}}$ (b) $2\sqrt{3}$ (c) $\sqrt{3}$ (d) 3
- 28 If $\sin 2X = \frac{1}{2}$ where $2X$ is the measure of an acute angle, then $\tan 3X = \dots\dots\dots$
 (a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{3}}$ (c) $\sqrt{3}$ (d) 1
- 29 If $\cos \frac{X}{2} = \frac{\sqrt{3}}{2}$ where $\frac{X}{2}$ is the measure of an acute angle, then $\tan (X - 15^\circ) = \dots\dots\dots$
 (a) $\sqrt{3}$ (b) $\frac{1}{\sqrt{3}}$ (c) 1 (d) $\frac{\sqrt{3}}{2}$
- 30 If $\sin (X + 5^\circ) = \frac{1}{2}$ where $(X + 5^\circ)$ is the measure of an acute angle, then $\tan (X + 20^\circ) = \dots\dots\dots$
 (a) $\frac{\sqrt{2}}{2}$ (b) $\frac{1}{2}$ (c) $\frac{\sqrt{3}}{2}$ (d) 1
- 31 For any angle A , $\frac{\sin A}{\cos A} = \dots\dots\dots$
 (a) $\sin A$ (b) $\cos A$ (c) $\tan A$ (d) 1
- 32 If $2 \sin X = \tan X$ where X is an acute angle, then $m(\angle X) = \dots\dots\dots$
 (a) 60° (b) 45° (c) 30° (d) 15°
- 33 If X and y are complementary angles where $X : y = 1 : 2$, then $\sin X + \cos y = \dots\dots\dots$
 (a) $\frac{1}{2}$ (b) $\frac{1}{4}$ (c) $\frac{\sqrt{3}}{2}$ (d) 1
- 34 In $\triangle ABC$, if $m(\angle A) : m(\angle B) : m(\angle C) = 3 : 4 : 5$, then $\cos B = \dots\dots\dots$
 (a) 0 (b) $\frac{1}{2}$ (c) 1 (d) $\frac{\sqrt{3}}{2}$

Unit 4

Choose the correct answer

- 35 In $\triangle ABC$, if $\sin A = \cos C$, then $\triangle ABC$ is
- (a) an acute-angled triangle. (b) a right-angled triangle.
(c) an obtuse-angled triangle. (d) an isosceles triangle.
- 36 For any two acute angles A and B , if $\sin A = \cos B$, then $m(\angle A) + m(\angle B) = \dots\dots\dots$
(a) 30° (b) 60° (c) 90° (d) 180°
- 37 If $\angle X$, $\angle Y$ are two complementary angles and $\sin X = \frac{3}{5}$, then $\cos Y = \dots\dots\dots$
(a) $\frac{4}{5}$ (b) $\frac{3}{5}$ (c) $\frac{3}{4}$ (d) $\frac{5}{3}$
- 38 $\triangle ABC$ is a right-angled triangle at B , then $\frac{\sin C}{\cos A} = \dots\dots\dots$
(a) $\frac{\sqrt{3}}{2}$ (b) $\frac{2}{\sqrt{3}}$ (c) 1 (d) zero
- 39 $\triangle ABC$ is a right-angled triangle at A , then cosine angle B : sine angle C equals .
(a) $\frac{3}{5}$ (b) $\frac{4}{3}$ (c) $\frac{3}{4}$ (d) 1
- 40 In $\triangle ABC$, if $m(\angle C) = 90^\circ$, then $\sin A - \cos B = \dots\dots\dots$
(a) zero (b) $2 \sin C$ (c) $2 \tan C$ (d) $2 \cos C$
- 41 In $\triangle ABC$, if $m(\angle B) = 90^\circ$, then $\sin A + \cos C = \dots\dots\dots$
(a) $2 \sin C$ (b) $2 \cos A$ (c) $2 \cos C$ (d) $\tan A$
- 42 In $\triangle ABC$, if $m(\angle B) = 90^\circ$, then $\sin A + 2 \cos C = \dots\dots\dots$
(a) $2 \sin C$ (b) $3 \sin A$ (c) $2 \cos C$ (d) $\tan A$
- 43 ABC is a right-angled triangle at B , if $\sin A + \cos C = 1$, then $\tan C = \dots\dots\dots$
(a) -1 (b) $\sqrt{3}$ (c) $\frac{1}{\sqrt{3}}$ (d) $\frac{1}{2}$

Unit 4

Choose the correct answer

- 44 $\sin 25^\circ = \cos \dots\dots\dots$
 (a) 25° (b) 65° (c) 90° (d) 155°
- 45 If $\sin 70^\circ = \cos X$ where X is the measure of an acute angle , then $X = \dots\dots\dots$
 (a) 60° (b) 45° (c) 10° (d) 20°
- 46 If $\sin 30^\circ = \cos \theta$, where θ is the measure of an acute angle , then $\theta = \dots\dots\dots$
 (a) 15° (b) 30° (c) 60° (d) 90°
- 47 In $\triangle ABC$, if $m(\angle A) = 85^\circ$ and $\sin B = \cos B$, then $m(\angle C) = \dots\dots\dots$
 (a) 30° (b) 45° (c) 50° (d) 60°
- 48 ABC is a right-angled triangle at B , where $3 AC = 5 BC$, then $\tan A = \dots\dots\dots$
 (a) $\frac{3}{5}$ (b) $\frac{5}{3}$ (c) $\frac{3}{4}$ (d) $\frac{4}{3}$
- 49 In $\triangle ABC$ right at B , if $2 AB = \sqrt{3} AC$, then $m(\angle C) = \dots\dots\dots^\circ$
 (a) 30 (b) 45 (c) 60 (d) 75
- 50 ABC is a right-angled triangle at A in which : $\tan B = 1$
 , then $\tan C - \sin B \cos C = \dots\dots\dots$
 (a) zero (b) 1 (c) 2 (d) $\frac{1}{2}$
- 51 ABC is a triangle in which $m(\angle B) = 90^\circ$, $3 \tan C - 4 = 0$
 , then $25 \sin C \cos C = \dots\dots\dots$
 (a) 3 (b) 4 (c) 25 (d) 12
- 52 For any acute angle A , $\sin A - \cos A \tan A = \dots\dots\dots$
 (a) zero (b) 1 (c) -1 (d) 2
- 53 DEF is a right-angled triangle at E , which of the following relations is false ?
 (a) $\tan D \times \tan F = 1$ (b) $\sin D = \cos F$ (c) $\cos D = \sin F$ (d) $\cos D = \sin E$

Unit 4

Choose the correct answer

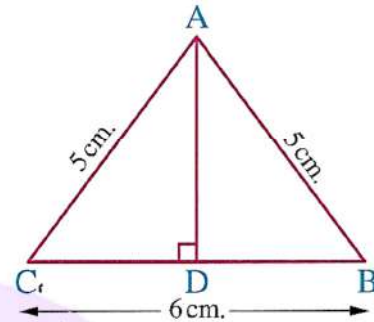
54 If $\sin \theta = 0.6$, then $m(\angle \theta) \approx \dots\dots\dots$

- (a) $51^\circ 33' 35''$ (b) $36^\circ 52' 12''$ (c) $47^\circ 15' 48''$ (d) $45^\circ 15' 6''$

55 In the opposite figure :

$\cos B = \dots\dots\dots$

- (a) $\frac{4}{5}$ (b) $\frac{3}{5}$
(c) $\frac{5}{6}$ (d) $\frac{5}{4}$



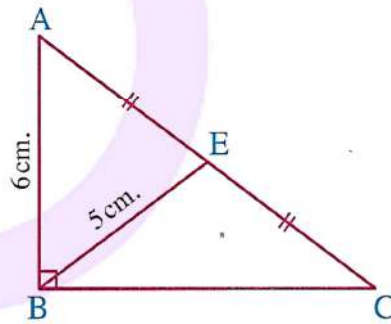
56 In the opposite figure :

$\triangle ABC$ is a right-angled triangle at B

, $\overline{BE}$ is a median, $BE = 5$ cm.

, $AB = 6$ cm. , then $\sin C = \dots\dots\dots$

- (a) $\frac{5}{6}$ (b) $\frac{3}{5}$
(c) $\frac{6}{5}$ (d) $\frac{5}{3}$



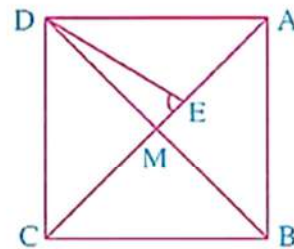
57 In the opposite figure :

ABCD is a square its diagonals intersect at M

, $E \in \overline{AC}$, $CE = 5$ cm. , $AE = 3$ cm.

, then $\tan(\angle DEC)$

- (a) 3 (b) 4 (c) $\frac{1}{4}$ (d) 5



Unit 4

Choose the correct answer

58 In the opposite figure :

If $\tan x = \frac{3}{4}$

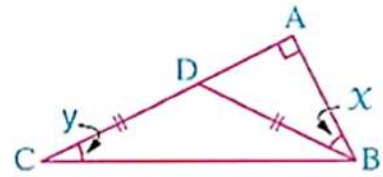
, then $\tan y = \dots\dots\dots$

(a) 3

(b) 2

(c) $\frac{1}{2}$

(d) $\frac{1}{3}$



59 In the opposite figure :

ABO is a right-angled triangle

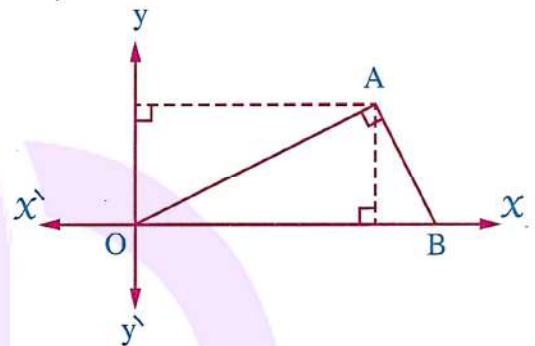
, A (6 , 3) , then $\tan (\angle ABO) = \dots\dots\dots$

(a) $\frac{1}{2}$

(b) 2

(c) $\frac{\sqrt{5}}{5}$

(d) $\frac{2\sqrt{5}}{5}$



60 In the opposite figure :

LMN is a right-angled triangle at M

, $LN = 10$ cm. , $m(\angle L) = 50^\circ$

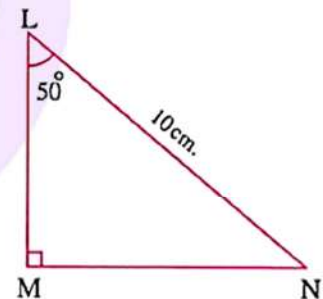
the length of $\overline{LM} \cong \dots\dots\dots$ cm.

(a) 4

(b) 6

(c) 8

(d) 2



61 From the opposite figure :

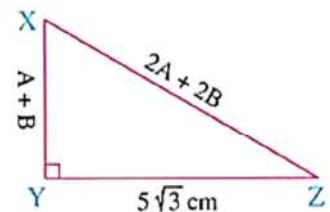
Perimeter of triangle XYZ = $\dots\dots\dots$ cm.

(a) $15 + \sqrt{3}$

(b) $15 - \sqrt{3}$

(c) $15 + 5\sqrt{3}$

(d) $3 + \sqrt{15}$



Unit 4

Answer the following

- 1 If the ratio between the measures of two supplementary angles is 3 : 5 , find the measure of each one.
- 2 Without using the calculator , prove that :
 - a. $\sin^2 60^\circ - \tan 60^\circ \cos 30^\circ + \cos 60^\circ \sin 30^\circ = \sin 30^\circ - \sin^2 45^\circ - \cos 60^\circ$
 - b. $\frac{\sin 30^\circ \tan 45^\circ}{\cos 60^\circ} = \sin^2 45^\circ + \cos^2 45^\circ$
- 3 Find the value of X in each of the following :
 - a. $4 X = \cos^2 30^\circ \tan^2 30^\circ \tan^2 45^\circ$
 - b. $2 \sin X = \sin 30^\circ \cos 60^\circ + \cos 30^\circ \sin 60^\circ$
- 4 If $\sqrt{3} \sin X \tan 30^\circ = \tan 45^\circ \cos 2 X$ **find** : $m(\angle X)$ where X is an acute angle.
- 5 If $\sin^2 45^\circ = \cos E \tan 30^\circ$, **find** : $m(\angle E)$ where E is an acute angle.
- 6 If $4 \cos 60^\circ \sin 30^\circ = \tan \theta$, **find** : $m(\angle \theta)$ where θ is an acute angle.
- 7 ABC is a right-angled triangle at B , $m(\angle A) = 2 m(\angle C)$
Find : The value of $\cos^2 A + \tan^2 C$

Unit 4

Answer the following

- 8 ABC is a triangle right-angled at C , $AB = 13$ cm. , $BC = 12$ cm.

1 Prove that : $\sin A \cos B + \cos A \sin B = 1$

2 Find the value of : $1 + \tan^2 A$

3 $m(\angle B)$

- 9 ABC is a right-angled triangle at B , $AB = 6$ cm. , $\tan C = \frac{3}{4}$, find :

1 The length of each of $\overline{BC}$ and $\overline{AC}$

2 $\sin A + \cos A$

- 9 ABC is a right-angled triangle at B , if $2 AB = \sqrt{3} AC$

Find : 1 the main trigonometrical ratios of the angle C

2 $m(\angle C)$

3 $\sin^2 A - \cos^2 C$

- 10 ABC is an isosceles triangle in which $AB = AC = 7$ cm. and $BC = 10$ cm. Find :

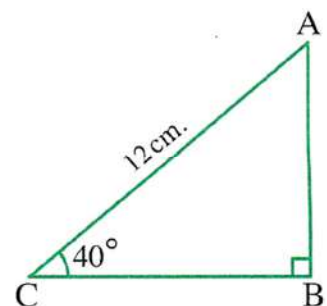
1 $m(\angle B)$

2 The area of $\triangle ABC$

- 11 In the opposite figure :

$m(\angle C) = 40^\circ$, $AC = 12$ cm.

Find : The area of $\triangle ABC$



Unit 4

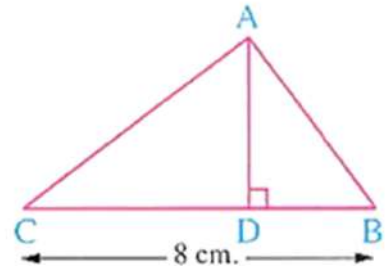
Answer the following

- 12 In the opposite figure :

$\triangle ABC$ is an acute-angled triangle

, $BC = 8 \text{ cm.}$, $\overline{AD} \perp \overline{BC}$

Find the value of : $AB \cos B + AC \cos C$



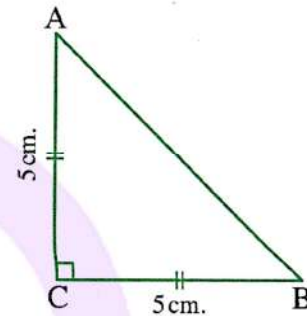
- 13 In the opposite figure :

$\triangle ABC$ is an isosceles triangle , $m(\angle C) = 90^\circ$

and $AC = BC = 5 \text{ cm.}$, then find :

1 $AC : BC : AB$

2 $\tan B$, $\sin A$



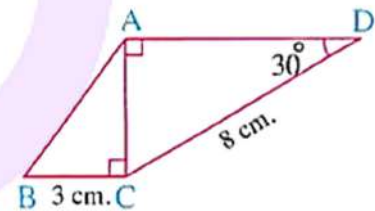
- 14 In the opposite figure :

$m(\angle D) = 30^\circ$, $m(\angle CAD) = m(\angle ACB) = 90^\circ$

, $BC = 3 \text{ cm.}$, $CD = 8 \text{ cm.}$

Find : 1 $\tan B$

2 $m(\angle BAD)$



- 15 In the opposite figure :

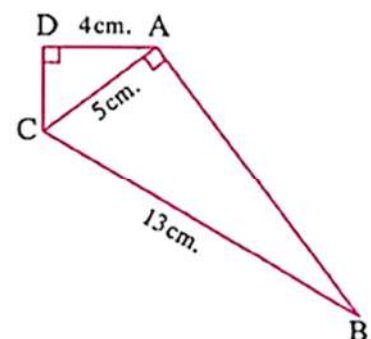
$m(\angle ADC) = 90^\circ$, $m(\angle BAC) = 90^\circ$

, $AD = 4 \text{ cm.}$, $AC = 5 \text{ cm.}$, $BC = 13 \text{ cm.}$

Find the value of each of :

1 $\tan(\angle ACB) + \tan(\angle ACD)$

2 $\sin(\angle B) \cos(\angle CAD) + \cos(\angle B) \sin(\angle CAD)$



Unit 4

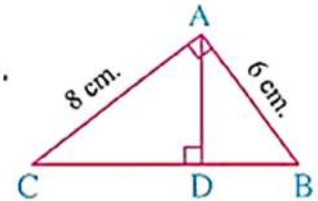
Answer the following

- 16 In the opposite figure :

$m(\angle BAC) = 90^\circ$, $\overline{AD} \perp \overline{BC}$, $AB = 6$ cm. , $AC = 8$ cm.

Find : 1 $\tan(\angle BAD)$

2 $\cos(\angle DAC) + \cos(\angle DAB)$

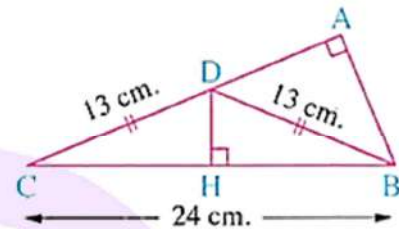


- 17 In the opposite figure :

$\triangle ABC$ is right-angled at A , $D \in \overline{AC}$
 , where $BD = DC = 13$ cm. , $\overline{DH} \perp \overline{BC}$
 , $BC = 24$ cm. Find the value of :

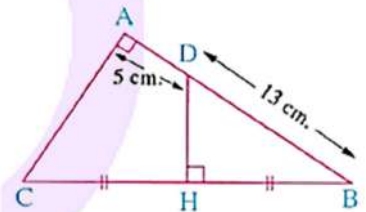
1 $\tan(\angle DCB)$

2 $\cos(\angle ABC)$



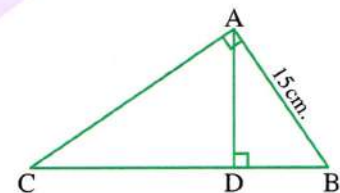
- 18 In the opposite figure :

$m(\angle A) = 90^\circ$, $\overline{DH} \perp \overline{BC}$ where H is the midpoint of $\overline{BC}$
 , $AD = 5$ cm. and $BD = 13$ cm. Find with proof $\tan B$



- 19 In the opposite figure :

$\triangle ABC$ is right-angled at A , $\overline{AD} \perp \overline{BC}$
 , $AB = 15$ cm. , $\tan(\angle BAD) = \frac{3}{4}$
 Find the area of $\triangle ABC$



- 20 In the opposite figure :

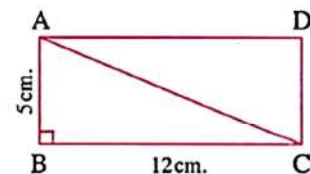
If ABCD is a rectangle in which : $AB = 5$ cm. , $BC = 12$ cm.

Find :

1 The length of $\overline{AC}$, $m(\angle ACB)$

2 The value of : $5 \tan(\angle ACD) - 13 \sin(\angle DAC)$

3 The area of the rectangle ABCD



Unit 4

Answer the following

21 In the opposite figure :

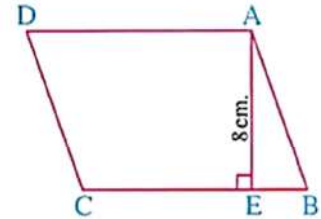
ABCD is a parallelogram of surface area 96 cm^2

$BE : EC = 1 : 3$, $\overline{AE} \perp \overline{BC}$ and $AE = 8 \text{ cm}$.

Find : 1 The length of $\overline{AD}$

2 $m(\angle B)$

3 The length of $\overline{AB}$ to the nearest one decimal



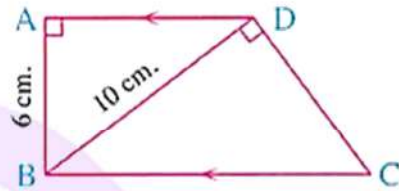
22 In the opposite figure :

ABCD is a trapezium in which $\angle A$ is right

, $\overline{AD} \parallel \overline{BC}$, $m(\angle BDC) = 90^\circ$

, $AB = 6 \text{ cm}$, $BD = 10 \text{ cm}$.

Find : $\tan(\angle ADB)$ and the length of $\overline{DC}$



23 ABCD is a trapezoid in which $\overline{AD} \parallel \overline{BC}$, $m(\angle B) = 90^\circ$ If $AB = 3 \text{ cm}$.

, $AD = 6 \text{ cm}$, $BC = 10 \text{ cm}$.

, then prove that : $\cos(\angle DCB) - \tan(\angle ACB) = \frac{1}{2}$

24 ABCD is an isosceles trapezoid , $\overline{AD} \parallel \overline{BC}$, $AD = 4 \text{ cm}$, $AB = 5 \text{ cm}$.

where $BC = 12 \text{ cm}$. Prove that : $\frac{5 \tan B \cos C}{\sin^2 C + \cos^2 C} = 3$

Find : 1 $m(\angle B)$, $m(\angle A)$

2 The area of the trapezium ABCD

Unit 4

Answer the following

- 25 A ladder $\overline{AB}$ is of length 6 metres, its upper edge A lies on a vertical wall and its other edge B on a horizontal floor. If C is the projection of the point A on the surface of the floor and its angle of slope on the surface of the floor was of measure 60° , then find the length of $\overline{AC}$
- 26 The wind broke the upper point of a tree to make an angle of measure 60° with the ground level, if the top of the tree meets the ground 4 metres away from the bottom of the tree, find the height of the tree to the nearest metre.

شرح خطوات الحل على قناة اليوتيوب



Math For Kids: Hoda Ismail

Unit 5

Choose the correct answer

- 1 If C is the midpoint of $\overline{AB}$ where A $(-3, 6)$, B $(3, -6)$, then C =
 (a) $(6, -6)$ (b) $(0, 0)$ (c) $(3, 3)$ (d) $(-3, 0)$
- 2 If $\overline{AB}$ is a diameter in a circle where A $(3, -5)$, B $(5, 1)$, then the centre of the circle is ..
 (a) $(4, -2)$ (b) $(4, 2)$ (c) $(2, -2)$ (d) $(8, -2)$
- 3 If the origin point is the midpoint of $\overline{AB}$ where A $(2, -3)$, then the point B is
 (a) $(-3, 2)$ (b) $(-2, 3)$ (c) $(-2, -3)$ (d) $(2, 3)$
- 4 If the X-axis bisects $\overline{AB}$ such that A $(3, 2)$ and B $(-2, y)$, then $y = \dots\dots\dots$
 (a) 3 (b) 2 (c) -2 (d) 4
- 5 If C $(6, -4)$ is the midpoint of $\overline{AB}$ where A $(5, -3)$, then B is
 (a) $(7, -5)$ (b) $(-5, -7)$ (c) $(-5, 7)$ (d) $(11, -7)$
- 6 If ABCD is a rectangle A $(-4, -1)$, C $(4, 5)$, then the length of $\overline{BD} = \dots\dots\dots$ length units.
 (a) 10 (b) 6 (c) 5 (d) 4
- 7 The distance between the point $(\sqrt{3}, 1)$ and the origin point is length units.
 (a) 4 (b) 3 (c) 2 (d) $\sqrt{10}$
- 8 A circle of centre at the origin point and its radius length is 2 length units , which of the following points belongs to the circle ?
 (a) $(1, -2)$ (b) $(-2, \sqrt{5})$ (c) $(\sqrt{3}, 1)$ (d) $(0, 1)$
- 9 If the distance between the two points $(a, 0)$ and $(0, 1)$ is one length unit , then $a = \dots\dots\dots$
 (a) 1 (b) -1 (c) 0 (d) 2

Unit 5

Choose the correct answer

- 10 The perpendicular length between $X = 5$, $X + 3 = 0$ equals length units.
 (a) 2 (b) 8 (c) - 8 (d) 5
- 11 The distance between the two straight lines : $y + 1 = 0$, $y + 3 = 0$ islength units.
 (a) 4 (b) 2 (c) 1 (d) 5
- 12 The perpendicular distance between the point $(3 , - 4)$ and X -axis equals length units.
 (a) 3 (b) - 4 (c) 5 (d) 4
- 13 The distance between the point $(- 3 , 2)$ and the y -axis equals length units.
 (a) 3 (b) 2 (c) - 2 (d) - 3
- 14 The distance between the point $(\ell , - 4)$ and y -axis is length units where $\ell \in \mathbb{R}$
 (a) 4 (b) ℓ (c) - 4 (d) $|\ell|$
- 15 The slope of the straight line parallel to the X -axis is
 (a) undefined (b) - 1 (c) 1 (d) zero
- 16 The slope of the straight line perpendicular to the y -axis is
 (a) undefined. (b) zero (c) 1 (d) - 1
- 17 The slope of the straight line : $y + 2 = 0$ is
 (a) 2 (b) - 2 (c) undefined. (d) zero
- 18 The slope of the straight line $X - 5 = 0$ is
 (a) 5 (b) $\frac{1}{5}$ (c) zero (d) undefined.
- 19 If $\overleftrightarrow{AB}$, $\overleftrightarrow{DC}$ are parallel , their slopes are m_1 , m_2 , then
 (a) $m_1 = - m_2$ (b) $m_1 - m_2 = 0$ (c) $m_1 m_2 = - 1$ (d) $m_1 m_2 = 1$

Unit 5

Choose the correct answer

- 20 If $\overrightarrow{AB} \parallel \overrightarrow{CD}$ and the slope of $\overrightarrow{AB} = \frac{2}{3}$, then the slope of $\overrightarrow{CD} = \dots\dots\dots$
 (a) $\frac{3}{2}$ (b) $-\frac{3}{2}$ (c) $-\frac{2}{3}$ (d) $\frac{2}{3}$
- 21 If m_1, m_2 are the slopes of two perpendicular straight lines, then $m_1 \times m_2 = \dots\dots\dots$
 (a) 0 (b) 1 (c) -1 (d) 2
- 22 If the two straight lines : $y = aX + b$, $y = cX + d$ are perpendicular, then $\dots\dots\dots \times \dots\dots\dots = -1$
 (a) $a \times d$ (b) $b \times c$ (c) $a \times c$ (d) $b \times d$
- 23 If $\overrightarrow{AB} \perp \overrightarrow{CD}$, and the slope of $\overrightarrow{AB} = \frac{1}{5}$, then the slope of $\overrightarrow{CD} = \dots\dots\dots$
 (a) -5 (b) $-\frac{1}{5}$ (c) 5 (d) $\frac{1}{5}$
- 24 If m_1, m_2 are the slope of two perpendicular straight lines, $m_1 = 0.75$, then $m_2 = \dots\dots\dots$
 (a) $-\frac{3}{4}$ (b) $\frac{4}{3}$ (c) $-\frac{4}{3}$ (d) $\frac{3}{4}$
- 25 If $\overrightarrow{AB} \perp \overrightarrow{CD}$ and the slope of $\overrightarrow{AB} = 0$, then the slope of $\overrightarrow{CD} = \dots\dots\dots$
 (a) 1 (b) -1 (c) zero (d) not defined.
- 26 In the square XYZL, if the slope of $\overrightarrow{XZ} = 1$, then the slope of $\overrightarrow{YL} = \dots\dots\dots$
 (a) 1 (b) -1 (c) ± 1 (d) 45°
- 27 If ABCD is a rhombus where A (3, 5), C (5, -1), then the slope of $\overrightarrow{BD} = \dots\dots\dots$
 (a) $-\frac{1}{3}$ (b) 3 (c) $\frac{1}{3}$ (d) -3
- 28 ABCD is a parallelogram where A (-1, 4) and B (0, 1), then the slope of $\overrightarrow{DC} = \dots\dots\dots$
 (a) -3 (b) $-\frac{1}{3}$ (c) $\frac{1}{3}$ (d) 3
- 29 ABC is a right-angled triangle at B where A = (1, 5) and B = (0, 1), then the slope of $\overrightarrow{BC}$ equals $\dots\dots\dots$
 (a) -4 (b) $-\frac{1}{4}$ (c) $\frac{1}{4}$ (d) 4

Unit 5

Choose the correct answer

- 30 If $-\frac{3}{2}$, $\frac{6}{k}$ are the slopes of two parallel straight lines, then $k = \dots\dots\dots$
 (a) 6 (b) -4 (c) $\frac{3}{2}$ (d) 2
- 31 If $-\frac{2}{3}$, $\frac{6}{k}$ are the slopes of two perpendicular straight lines, then $k = \dots\dots\dots$
 (a) 4 (b) -9 (c) -4 (d) 9
- 32 The slope of the straight line L_1 is $\frac{a}{5}$ and the slope of the straight line L_2 is $-\frac{b}{3}$ where $a \neq 0$, $b \neq 0$ and $L_1 \perp L_2$, then $ab = \dots\dots\dots$
 (a) $\frac{3}{5}$ (b) $-\frac{3}{5}$ (c) 15 (d) -15
- 33 If $\overrightarrow{AB}$ is straight line parallel to the X -axis where $A(4, y)$, $B(-2, -1)$ then $y = \dots\dots\dots$
 (a) -1 (b) zero (c) 1 (d) 4
- 34 If the straight line: $aX + (2 - a)y = 5$ is parallel to the straight line passing through the two points $(1, 4)$, $(3, 5)$, then $a = \dots\dots\dots$
 (a) 3 (b) -2 (c) 1 (d) zero
- 35 If the straight line whose equation is $kX + \sqrt{3}y = 4$ makes an angle of measure 60° with the positive direction of X -axis, then $k = \dots\dots\dots$
 (a) 3 (b) -3 (c) $\sqrt{3}$ (d) $-\sqrt{3}$
- 36 The straight line whose equation is: $3X - 3y + 5 = 0$ makes a positive angle with the positive direction of X -axis, its measure = $\dots\dots\dots$
 (a) 30° (b) 45° (c) 60° (d) 90°
- 37 The slope of the straight line which makes with the positive direction of X -axis an angle whose positive measure is X° equals $\dots\dots\dots$
 (a) $\sin X$ (b) $\cos X$ (c) $\frac{\sin X}{\cos X}$ (d) $\sin X + \cos X$

Unit 5

Choose the correct answer

- 38 If the slope of a straight line is more than zero , then the type of the positive angle which it makes with the positive direction of X -axis is
- (a) zero. (b) acute. (c) right. (d) obtuse.
- 39 The equation of a straight line is : $\frac{x}{2} - \frac{y}{3} = 6$, then it intercepts from the positive part of X -axis a part of length length units.
- (a) 3 (b) 12 (c) 6 (d) 18
- 40 The straight line whose equation is $2x - 3y - 6 = 0$ intersects from the negative part of y -axis a part of length length unit.
- (a) - 6 (b) - 2 (c) $\frac{2}{3}$ (d) 2
- 41 The area of the triangle bounded by the straight lines $3x + 8y = 24$, $x = 0$, $y = 0$ equals square unit.
- (a) 24 (b) 8 (c) 12 (d) 3
- 42 The points $(0 , 0)$, $(6 , 0)$ and $(0 , 8)$
- (a) form an acute-angled triangle. (b) form a right-angled triangle.
(c) form an obtuse-angled triangle. (d) are collinear.
- 43 The equation of y -axis is
- (a) $x = 0$ (b) $y = x$ (c) $y = 0$ (d) $x = 1$
- 44 The equation of x -axis is
- (a) $x = 0$ (b) $y = x$ (c) $y = 0$ (d) $x = 1$
- 45 The equation of the straight line which passes through the point $(3 , - 5)$ and parallel to y -axis is
- (a) $x = 3$ (b) $y = - 5$ (c) $y = 2$ (d) $x = - 5$

Unit 5

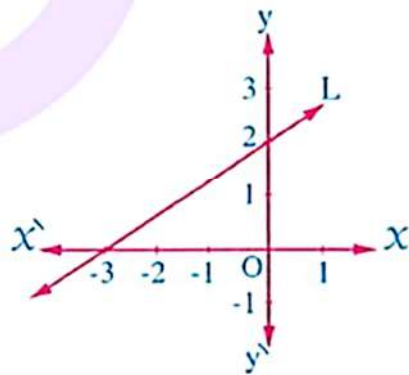
Choose the correct answer

- 46 The equation of the straight line which passes through the point $(-2, -3)$ and parallel to X -axis is
- (a) $X = -2$ (b) $X = -3$ (c) $y = -2$ (d) $y = -3$
- 47 The equation of the straight line whose slope equals 1 and passes through the origin point is
- (a) $y = X + 1$ (b) $X = 1$ (c) $y = 1$ (d) $y = X$
- 48 The equation of the straight line which its slope $= \frac{1}{2}$ and cuts the y -axis at the point $(0, 3)$ is
- (a) $2y = \frac{1}{2}X + 6$ (b) $y = \frac{1}{2}X$ (c) $y = \frac{1}{2}X + 3$ (d) $2y = \frac{1}{2}X + 3$
- 49 The equation of the straight line which passes through the origin point and makes with the positive direction of X -axis an angle of measure 60° is
- (a) $X = \sqrt{3}y$ (b) $y = \sqrt{3}X + 2$ (c) $y = 3X$ (d) $y = \sqrt{3}X$

50 In the opposite figure :

The slope of the straight line L equals

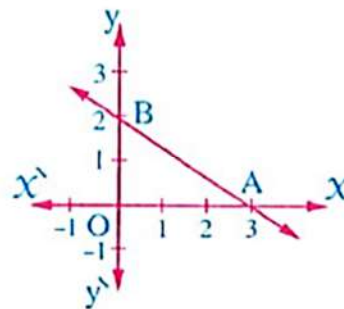
- (a) $\frac{2}{3}$ (b) $-\frac{2}{3}$
 (c) $\frac{3}{2}$ (d) $-\frac{3}{2}$



51 In the opposite figure :

The slope of $\overrightarrow{AB} = \dots\dots\dots$

- (a) $\frac{2}{3}$ (b) $-\frac{2}{3}$
 (c) $\frac{3}{2}$ (d) $-\frac{3}{2}$



Unit 5

Choose the correct answer

52 In the opposite figure :

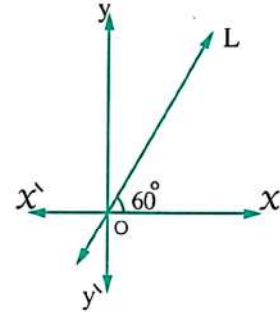
The equation of the straight line L is

(a) $x = \sqrt{3} y$

(b) $y = \sqrt{3} x$

(c) $x = y$

(d) $y = \sqrt{3}$



53 In the opposite figure :

$\overleftrightarrow{AB}$ intercepts from the positive part of x-axis 3 length units

, $m(\angle ABO) = 45^\circ$

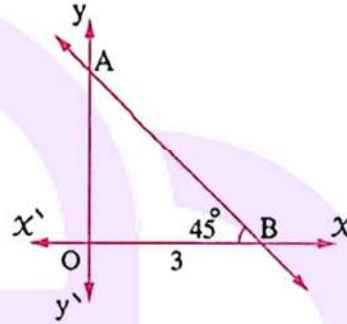
the equation of $\overleftrightarrow{AB}$ is

(a) $y = x + 3$

(b) $y = -x + 3$

(c) $y = 3x + 1$

(d) $y = -3x + 1$



54 In the opposite figure :

If $AO = 8$ length units , $OB = 6$ length units

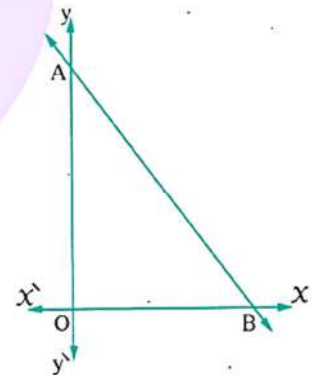
, then the equation of $\overleftrightarrow{AB}$ is

(a) $y = \frac{4}{3} x + 8$

(b) $y = -\frac{4}{3} x - 8$

(c) $y = \frac{3}{4} x - 8$

(d) $y = -\frac{4}{3} x + 8$



55 In the opposite figure :

OABC is a square of side length 4 cm.

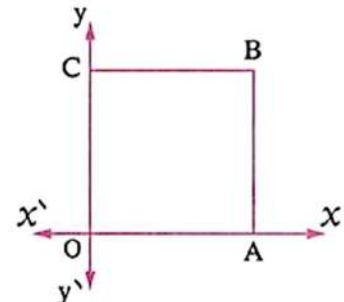
, then the equation of $\overleftrightarrow{AC}$ is

(a) $y = x + 4$

(b) $y = x - 4$

(c) $y = -x + 4$

(d) $x = 4y + 4$



Unit 5

Answer the following

- 1 If A (1 , -6) , B (9 , 2) , find the coordinates of the points which divide $\overline{AB}$ into four equal parts in length.
- 2 If the point (2 , 3) is the midpoint of $\overline{AB}$, where $A \in x\text{-axis}$, $B \in y\text{-axis}$, find the coordinates of A and B
- 3 If the point (4 , 6) is the midpoint of the distance between (x , 3) , (6 , y) , find the value of x y
- 4 If the midpoint of $\overline{AB}$ is C (6 , -4) where A (5 , -3) , find the point B
- 5 $\overline{AB}$ is a diameter of the circle M , B (8 , 11) , M (5 , 7) , then find the coordinates of A
- 6 ABCD is a parallelogram its diagonals intersect at M where :
A (3 , -1) , B (6 , 2) , C (1 , 7)
Find the coordinates of the two points M and D
- 7 $\overline{AD}$ is a median in $\triangle ABC$, M is the midpoint of $\overline{AD}$ where M (0 , 6) , B (3 , 2) , C (-3 , 6) , find the coordinates of the point A
- 8 If the distance between the two points (x , 5) , (6 , 1) equals $2\sqrt{5}$ length units , find the values of x
- 9 If A (x , 3) , B (3 , 2) and C (5 , 1) and $AB = BC$, then find the value of x
- 10 If the point A (6 , a) $\in$ the axis of symmetry of $\overline{CD}$ where C (3 , 1) and D (-3 , 7) , find the value of a

Unit 5

Answer the following

- 11 Prove that the points A $(-3, -1)$, B $(6, 5)$ and C $(3, 3)$ are collinear.
- 12 If the points $(0, 1)$, $(a, 3)$ and $(2, 5)$ are collinear , find the value of a
- 13 Prove that the points A $(3, -1)$, B $(-4, 6)$ and C $(2, -2)$ lie on the circle whose centre is M $(-1, 2)$ Find the circumference of the circle.
- 14 **Prove that :** The points A $(4, 3)$, B $(-3, 2)$ and C $(3, 0)$ are the vertices of a right-angled triangle at C , then find its surface area.
 , find the coordinates of D that make the figure ACBD a rectangle
- 15 If the triangle whose vertices are Y $= (4, 2)$, X $= (3, 5)$, Z $= (-5, a)$ is right-angled at Y , find the value of : a
- 16 **Prove that :** The points A $(-3, 0)$, B $(3, 4)$ and C $(1, -6)$ are the vertices of an isosceles triangle of vertex A , then find the length of the drawn line segment from A perpendicular on $\overline{BC}$ then find its surface area.
- 17 Prove that the points A $(-1, 1)$, B $(0, 5)$, C $(4, 2)$ and D $(5, 6)$ are the vertices of a parallelogram.
- 18 Prove that the points A $(-1, 3)$, B $(5, 1)$, C $(6, 4)$, D $(0, 6)$ are the vertices of a rectangle.
- 19 Prove that the points A $(3, 2)$, B $(4, -3)$, C $(-1, -2)$ and D $(-2, 3)$ are the vertices of the rhombus ABCD
- 20 ABCD is a quadrilateral , where A $(2, 4)$, B $(-3, 0)$, C $(-7, 5)$, D $(-2, 9)$
prove that : ABCD is a square.
- 21 ABCD is a quadrilateral , where A $(2, 3)$, B $(6, 2)$, C $(-2, -2)$ and D $(-2, 1)$
Prove that : ABCD is a trapezoid.

Unit 5

Answer the following

- 22 ABCD is a trapezoid , $\overline{AB} \parallel \overline{CD}$, A (9 , -2) , B (3 , 2) , C (x , -x) , D (4 , -3)
Find the coordinates of the point C
- 23 If the straight line $\overleftrightarrow{AB} \parallel$ the y-axis , where A (x , 7) and B (3 , 5)
, then find the value of : x
- 24 If the straight line $\overleftrightarrow{CD} \parallel$ the x-axis , where C (4 , 2) and D (-5 , y)
, find the value of : y
- 25 Prove that the straight line which passes through the points (-1 , 3) and (2 , 4)
is parallel to the straight line : $3y - x - 1 = 0$
- 26 Prove that the straight line which passes through the two points $(4 , 3\sqrt{3})$
and $(5 , 2\sqrt{3})$ is perpendicular to the straight line that makes with the positive
direction of the x-axis an angle of measure 30°
- 27 If the straight line L_1 passes through the points (3 , 1) , (2 , k) and the straight line L_2
makes with the positive direction of the x-axis an angle of measure 45°
, find the value of k if $L_1 \parallel L_2$
- 28 If the two straight lines $L_1 : 3x - 4y - 3 = 0$, $L_2 : ay + 4x - 8 = 0$
are perpendicular , **find the value of a**
- 29 Find the slope of the straight line $3x + 4y - 5 = 0$, then find the length of the
intercepted part from y-axis.
- 30 Find the slope and the length of the y-intercept for the straight line : $\frac{x}{2} + \frac{y}{3} = 1$

Unit 5

Answer the following

- 31 Find the equation of the straight line whose slope equals 2 and intersects from the negative part of the y-axis a part of length 3 units.
- 32 Find the equation of the straight line whose slope is $\frac{1}{2}$ and passes through the point (2 , 3)
- 33 Find the equation of the straight line which passes through the origin point parallel to the straight line that makes an angle of measure 60° with the positive direction of the X-axis.
- 34 Find the equation of the straight line which passes through the points (1 , 3) and (-1 , -3) and prove that it is passing through the origin point.
- 35 Find the equation of the straight line which intercepts from the positive parts of the two axes two parts of lengths 2 units , 3 units from X and y-axes respectively.
- 36 Find the equation of the straight line which is parallel to the straight line $\frac{y-1}{x} = \frac{1}{3}$ and intersects from the negative part of y-axis a part equals 3 length units.
- 37 Find the equation of the straight line passing through the point (3 , -5) and parallel to the straight line $x + 2y - 7 = 0$
- 38 Find the equation of the straight line passing through the point (1 , 2) and perpendicular to the straight line passing through the two points A (2 , -3) , B (5 , -4)
- 39 Find the equation of the straight line which passes through the point (1 , 6) and the midpoint of $\overline{AB}$ where A (1 , -2) , B (3 , -4)
- 40 If the two points A (3 , -1) , B (5 , 3) , find the equation of the axis of symmetry of $\overline{AB}$
- 41 ABC is a triangle where A (1 , 2) , B (5 , -2) , C (3 , 4) , D is the midpoint of $\overline{AB}$, drawn $\overrightarrow{DE} \parallel \overrightarrow{BC}$ and intersects $\overline{AC}$ at E , find the equation of $\overline{DE}$

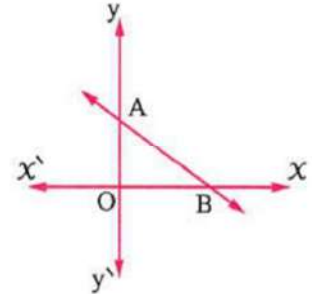
Unit 5

Answer the following

42 In the opposite figure :

$\overrightarrow{AB}$ cuts from the positive part of y-axis 3 length units
 $\therefore AB = 5$ length units.

Find : the equation of $\overrightarrow{AB}$

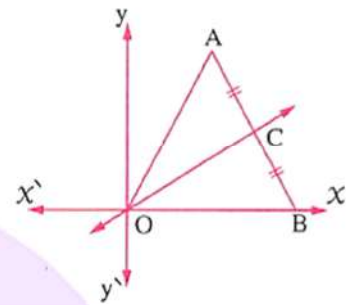


43 In the opposite figure :

ABO is an equilateral triangle

, C is the midpoint of $\overline{AB}$

Find : the equation of $\overrightarrow{OC}$ where O is the origin point.

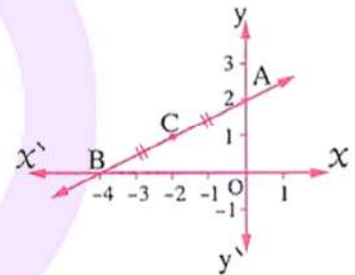


44 In the opposite figure :

C is the midpoint of $\overline{AB}$

Find : 1 The coordinates of the point C

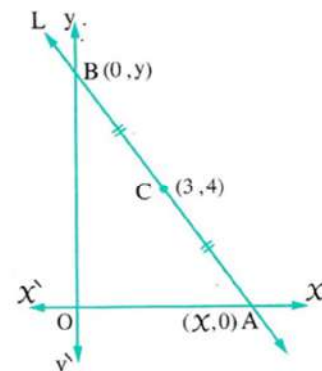
2 The equation of $\overrightarrow{CO}$



45 In the opposite figure :

The point C is the midpoint
of $\overline{AB}$ where C (3, 4)

Find the perimeter of the triangle AOB



Unit 5

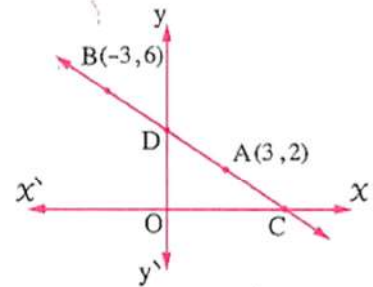
Answer the following

46 In the opposite figure :

$\overleftrightarrow{CD}$ passes through the two points $A(3, 2)$, $B(-3, 6)$ and cuts the two axes at C and D respectively.

Find with the proof :

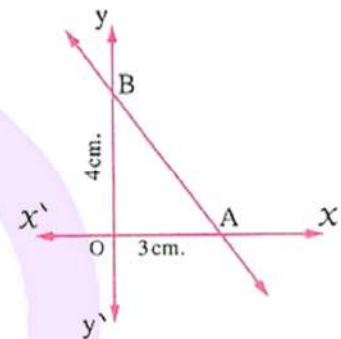
- 1 The equation of $\overleftrightarrow{CD}$
- 2 The area of the triangle DOC where O is the origin point.



47 In the opposite figure :

$\overleftrightarrow{AB}$ is a straight line Find :

- 1 The coordinates of the midpoint of $\overline{AB}$
- 2 The equation of the straight line passing by the origin point perpendicular to $\overleftrightarrow{AB}$

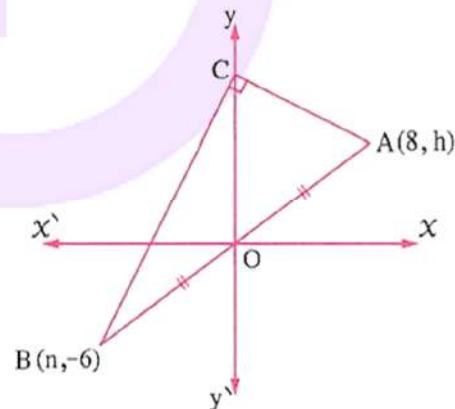


48 In the opposite figure :

$\triangle ABC$ is right-angled at C , where $A(8, h)$, $B(n, -6)$, O is the midpoint of $\overline{AB}$

Find : 1 $h + n$

- 2 The equation of $\overleftrightarrow{AC}$



شرح خطوات الحل على قناة



Math For Kids: Hoda Ismail

Accumulative Questions in Algebra

- 1) Twice of number $2^{14} = 2 \dots$
- 2) Quarter of number $2^{20} = 2 \dots$
- 3) $3^5 + 3^5 + 3^5 = 3 \dots\dots$
- 4) If $3^{X-2} = 1$, then $X = \dots\dots$
- 5) If $2^{X-1} = 16$, then $X = \dots\dots$
- 6) If $5^X = 3$, then $5^{X-1} = \dots\dots$
- 7) If $3^{X+1} = 12$, then $3^X = \dots\dots$
- 8) If $(x-3)^{\text{zero}} = 1$, then $X \in \dots\dots$
- 9) If $2^X = 3$, then $8^X = \dots\dots$
- 10) If $(\frac{5}{3})^x = (\frac{3}{5})^2$, then $x = \dots\dots$
- 11) If $2^X = \frac{1}{8}$, then $X = \dots\dots$
- 12) If $7^{x-3} = 5^{x-3}$, then $x = \dots\dots$
- 13) $2^{12} \times 3^{12} = 6 \dots\dots$
- 14) $\sqrt{100-64} = 10 - \dots\dots\dots$
- 15) If $X < \sqrt{51} < X+1$, $X \in \mathbb{Z}$, then $X = \dots\dots\dots$
- 16) $\sqrt{4} = \sqrt[3]{\dots}$
- 17) The additive identity is and the multiplicative identity is
The number has no multiplicative inverse

Accumulative Questions in Algebra

- 18) The additive inverse of number $(-5)^{\text{zero}}$ is
- 19) The multiplicative inverse of number 1.7
- 20) $|-2| = \dots\dots\dots$, $|x| = 7$, then $x = \dots\dots\dots$
- 21) The number 56.846 to the nearest 0.01 =
- 22) The degree of term $2X^3 Y^2 Z$ is
- 23) The degree of expression $3X^2 + XY^2 - 5Y^2$ is
- 24) Subtract $-4X$ from $3X = \dots\dots\dots$
- 25) $(-5a)$ increased by $(-3a) = \dots\dots\dots$
- 26) $\frac{Y^5}{Y^3} + Y^2 = \dots\dots\dots$
- 27) The middle term of in the expansion $(2X - 3Y)^2$ is
- 28) The middle term of in the expansion $(X - 4)(3X + 5)$ is ...
- 29) If $X^2 + kX + 25$ is a perfect square , then $k = \dots\dots\dots$
- 30) The H.C.F of expression $8X^2Y + 16XY^2$ is
- 31) If $5a = 45$, $ab = 1$, then $b = \dots\dots\dots$
- 32) If $A + B = 4$, then $3A + 3B = \dots\dots\dots$
- 33) If $A + B = AB = 5$, then $A^2 B + A B^2 = \dots\dots\dots$
- 34) If $X^2 - Y^2 = 20$, $X - Y = 5$, then $X + Y = \dots\dots\dots$
- 35) If $X^2 + Y^2 = 10$, $XY = 2$, then $(X - Y)^2 = \dots\dots\dots$

Accumulative Questions in Algebra

- 36) If $(X + Y)^2 = 20$, $XY = 3$, then $X^2 + Y^2 = \dots\dots$
- 37) If $(X-3)(X+3) = X^2 - k$, then $K = \dots\dots$
- 38) The number $0.\dot{3}$ in form $\frac{a}{b}$ is $\dots\dots\dots$
- 39) The number of rational numbers lie between $\frac{3}{7}$, $\frac{5}{7}$
- 40) The number lies at half distance between $\frac{1}{3}$, $\frac{5}{9}$
- 41) The irrational number lies between 3 and 4 is ..(3.5 , $\sqrt{8}$, $\sqrt{5}$, $\sqrt[3]{29}$)
- 42) The number $\frac{X+5}{X-2}$ is a rational number if $X \neq \dots\dots$
- 43) The number $\frac{4X}{X+1} = 0$, if $X = \dots\dots$
- 44) $\frac{3}{5} = \dots\dots\%$, 20 % of 240 = $\dots\dots$
- 45) The conjugate number of $\sqrt{5} - 2$ is $\dots\dots\dots$, its additive inverse is $\dots\dots$ and its multiplicative inverse is $\dots\dots$
- 46) A cube whose volume is 8 cm^3 then , it edge length = ...
Base area = $\dots\dots$ Lateral area = $\dots\dots$ total area = $\dots\dots$
Sum of edge length = $\dots\dots$
- 47) The S.S of $X^2 - 9 = 0$ in R is $\dots\dots\dots$
- 48) The S.S of $X^2 + 25 = 0$ in R is $\dots\dots\dots$
- 45) The S.S of $3 < X < 4$ where $X \in N$ is $\dots\dots\dots$
- 46) The S.S of $5 - X \leq 2$ where $X \in R$ is $\dots\dots\dots$

Accumulative Questions in Algebra

47) If $1 < X < 3$, $X \in \mathbb{R}$, then $3X-1 \in \dots\dots\dots$

48) $\mathbb{R}$ in interval form = $\dots\dots\dots$

49) $\mathbb{R}_+$ in interval form = $\dots\dots\dots$

50) The non positive real number in interval = $\dots\dots\dots$

51) $[-3,2] - \{-3\} = \dots\dots\dots$

52) $[-2,5] - \{-2,5\} = \dots\dots\dots$

53) $[3,7] -]3,7[= \dots\dots\dots$

54) $] -3,2 [\cup \{ 2 \} = \dots\dots\dots$

55) $] -3,2 [\cup \{-3, 2\} = \dots\dots\dots$

56) $] -3,2 [\cap \{-3, 2\} = \dots\dots\dots$

57) $] -3,2 [\cap \{-3, 2\} = \dots\dots\dots$

58) Choose: $\{3\} \subset (3,7)$, $]3,7[\subset \{3,7\}$

59) $\emptyset \dots\dots\dots \{ 1,5\}$ ($\in$, $\notin$, $\subset$, $\not\subset$)

60) The sum of two square roots of the number 4 = $\dots\dots\dots$

61) The prime number whose the sum of its factors 8 is $\dots\dots\dots$

62) The sum of numbers in the interval $] -3,3[= \dots\dots\dots$

63) $\mathbb{Q} \cup \mathbb{Q}^{\leq} = \dots\dots\dots$, $\mathbb{Q} \cap \mathbb{Q}^{\leq} = \dots\dots\dots$

64) $\mathbb{R}_+ \cup \mathbb{R}_- = \dots\dots\dots$, $\mathbb{R}_+ \cap \mathbb{R}_- = \dots\dots\dots$

65) $\mathbb{R} - \mathbb{Q} = \dots\dots\dots$, $\mathbb{R} - \mathbb{Q}^{\leq} = \dots\dots\dots$

شرح خطوات الحل على قناة



Math For Kids: Hoda Ismail

Accumulative Questions in Algebra

- 1) Twice of number $2^{14} = 2^{15}$
- 2) Quarter of number $2^{20} = 2^{18}$
- 3) $3^5 + 3^5 + 3^5 = 3^6$
- 4) If $3^{X-2} = 1$, then $X = 2$
- 5) If $2^{X-1} = 16$, then $X = 5$
- 6) If $5^X = 3$, then $5^{X-1} = \frac{3}{5}$
- 7) If $3^{X+1} = 12$, then $3^X = 4$
- 8) If $(x-3)^{\text{zero}} = 1$, then $X \in \mathbb{R} - \{3\}$
- 9) If $2^X = 3$, then $8^X = 27$
- 10) If $(\frac{5}{3})^x = (\frac{3}{5})^2$, then $x = -2$
- 11) If $2^X = \frac{1}{8}$, then $X = -3$
- 12) If $7^{x-3} = 5^{x-3}$, then $x = 3$
- 13) $2^{12} \times 3^{12} = 6^{12}$
- 14) $\sqrt{100-64} = 10 - 4$
- 15) If $X < \sqrt{51} < X+1$, $X \in \mathbb{Z}$, then $X = 7$
- 16) $\sqrt{4} = \sqrt[3]{8}$
- 17) The additive identity is zero and the multiplicative identity is 1
The number has no multiplicative inverse zero

Accumulative Questions in Algebra

- 18) The additive inverse of number $(-5)^{\text{zero}}$ is **-1**
- 19) The multiplicative inverse of number 1.7 **$\frac{10}{17}$**
- 20) $|-2| =$ **2**.... , $|x| = 7$, then $x =$ **± 7** ...
- 21) The number 56.846 to the nearest 0.01 = **56.85**
- 22) The degree of term $2X^3 Y^2 Z$ is **6**..
- 23) The degree of expression $3X^2 + XY^2 - 5Y^2$ is **Third**
- 24) Subtract $-4X$ from $3X =$ **$7X$**
- 25) $(-5a)$ increased by $(-3a) =$ **$-2a$**
- 26) $\frac{Y^5}{Y^3} + Y^2 =$ **$Y^2 + Y^2 = 2Y^2$**
- 27) The middle term of in the expansion $(2X - 3Y)^2$ is **$-12xy$**
- 28) The middle term of in the expansion $(X - 4)(3X + 5)$ is ... **$-7X$**
- 29) If $X^2 + kX + 25$ is a perfect square , then $k =$ **± 10** ...
- 30) The H.C.F of expression $8X^2Y + 16XY^2$ is **$8xy$**
- 31) If $5a = 45$, $ab = 1$, then $b =$ **$\frac{1}{9}$** ..
- 32) If $A + B = 4$, then $3A + 3B =$ **$3 \times 4 = 12$**
- 33) If $A + B = AB = 5$, then $A^2 B + A B^2 =$ **$AB(A+B) = 5 \times 5 = 25$**
- 34) If $X^2 - Y^2 = 20$, $X - Y = 5$, then $X + Y =$ **$20 \div 5 = 4$**
- 35) If $X^2 + Y^2 = 10$, $XY = 2$, then $(X - Y)^2 =$ **$10 - 2 \times 2 = 6$**

Accumulative Questions in Algebra

- 36) If $(X + Y)^2 = 20$, $XY = 3$, then $X^2 + Y^2 = 20 - 2 \times 3 = 14$
- 37) If $(X-3)(X+3) = X^2 - k$, then $K = 9$
- 38) The number $0.\dot{3}$ in form $\frac{a}{b}$ is $\frac{1}{3}$
- 39) The number of rational numbers lie between $\frac{3}{7}$, $\frac{5}{7}$ in finite
- 40) The number lies at half distance between $\frac{1}{3}$, $\frac{5}{9}$ $\frac{4}{9}$
- 41) The irrational number lies between 3 and 4 is ..(3.5 , $\sqrt{8}$, $\sqrt{5}$, $\sqrt[3]{29}$)
- 42) The number $\frac{X+5}{X-2}$ is a rational number if $X \neq 2$
- 43) The number $\frac{4X}{X+1} = 0$, if $X = \text{Zero}$
- 44) $\frac{3}{5} = 60\%$, 20 % of 240 = 48..
- 45) The conjugate number of $\sqrt{5} - 2$ is $\sqrt{5} + 2$, its additive inverse is $-\sqrt{5} + 2$ and its multiplicative inverse is $\sqrt{5} + 2$
- 46) A cube whose volume is 8 cm^3 then , it edge length = 2.
Base area = 4 cm^2 Lateral area = 16 cm^2 total area = 24 cm^2
Sum of edge length = 24.cm
- 47) The S.S of $X^2 - 9 = 0$ in R is $\{3, -3\}$
- 48) The S.S of $X^2 + 25 = 0$ in R is $\emptyset$
- 45) The S.S of $3 < X < 4$ where $X \in \mathbb{N}$ is $\emptyset$
- 46) The S.S of $5 - X \leq 2$ where $X \in \mathbb{R}$ is $[3, \infty[$

Accumulative Questions in Algebra

47) If $1 < X < 3$, $X \in \mathbb{R}$, then $3X-1 \in \dots$ **$]2, 8[$**

48) $\mathbb{R}$ in interval form = **$] -\infty, \infty[$** 49) $\mathbb{R}_+$ in interval form = **$]0, \infty[$**

50) The non positive real number in interval = **$] -\infty, 0]$**

51) $[-3, 2] - \{-3\} =$ **$] -3, 2]$**

52) $[-2, 5] - \{-2, 5\} =$ **$] -2, 5[$**

53) $[3, 7] -]3, 7[=$ **$\{3, 7\}$**

54) $] -3, 2[\cup \{2\} =$ **$] -3, 2]$**

55) $] -3, 2[\cup \{-3, 2\} =$ **$[-3, 2]$**

56) $] -3, 2[\cap \{-3, 2\} =$ **$\{2\}$**

57) $] -3, 2[\cap \{-3, 2\} =$ **$\emptyset$**

58) Choose: $\{3\} \subset (3, 7)$, $]3, 7]$ **$\{3, 7\}$**

59) $\emptyset \dots \{1, 5\}$ ($\in$, $\notin$, **$\subset$** , $\not\subset$)

60) The sum of two square roots of the number 4 = **$2\sqrt{2}$**

61) The prime number whose the sum of its factors 8 is **7**

62) The sum of numbers in the interval $] -3, 3]$ = **3**

63) $\mathbb{Q} \cup \mathbb{Q} =$ **$\mathbb{R}$** , $\mathbb{Q} \cap \mathbb{Q} =$ **$\mathbb{Q}$**

64) $\mathbb{R}_+ \cup \mathbb{R}_- =$ **$\mathbb{R}^*$** , $\mathbb{R}_+ \cap \mathbb{R}_- =$ **$\emptyset$**

65) $\mathbb{R} - \mathbb{Q} =$ **$\mathbb{R} \setminus \mathbb{Q}$** , $\mathbb{R} - \mathbb{Q} =$ **$\mathbb{Q}$**

شرح خطوات الحل على قناة



Math For Kids: Hoda Ismail

Accumulative Questions in Geometry

1) The types of angles (zero, acute , right , obtuse , straight , reflex)

- The type of the angle of measure 75° is
- The type of the angle of measure 200° is
- The type of the angle of measure 90° is
- The type of the angle of measure 180° is
- The type of the angle of measure 95° is
- The type of the angle of measure $89^\circ 62'$ is

2) The sum of measures of complementary angles =..... $^\circ$

3) The sum of measures of supplementary angles =..... $^\circ$

4) The sum of measures of accumulative angles at a point =..... $^\circ$

- if the measure of an angle is 65° ,then it complements angle , supplements angle ,and its reflex angle =
- if the ratio between two complementary angles is $7 : 11$ then the measure of smaller angle =

5) If the two adjacent angles are complementary , then the outer sides of them are

6) If the two adjacent angles are supplementary , then the outer sides of them are

7) Each two vertically opposite angles are

8) The sum of measures of exterior angles of any polygon =..... $^\circ$

9) The sum of measures of interior angles of triangle = $^\circ$

10) The sum of measures of interior angles of a quadrilateral =..... $^\circ$

11) The sum of measures of interior angles of a pentagon =..... $^\circ$

The measure of interior angle of regular pentagon =

Accumulative Questions in Geometry

- 12) The sum of measures of interior angles of a hexagon =.....°
The measure of interior angle of regular hexagon =
- 13) The number of diagonals of a quadrilateral , a pentagon ,
a hexagon , a triangle
- 14) The number of axes of symmetry of Square has , Equilateral triangle
has Rectangle has , Rhombus has , isosceles triangle has
isosceles trapezium has , trapezium has , Parallelogram has
Scalene triangle has..... , circle has
- 15) If ABCD square ,then the axis of symmetry of AC is
- 16) In Square ABCD , $m(\angle BAC) = \dots\dots\dots$
- 17) ABCD is a parallelogram , if $m(\angle A) = 70^\circ$, then :
 $m(\angle B) = \dots\dots\dots$, $m(\angle C) = \dots\dots\dots$, $m(\angle D) = \dots\dots\dots$
- 18) ABCD is a parallelogram , if $m(\angle A) + m(\angle C) = 200^\circ$, then $m(\angle D) = \dots^\circ$
- 19) ABCD is a parallelogram , if $m(\angle A) = 3 m(\angle B)$, then $m(\angle C) = \dots\dots^\circ$
- 20) in a parallelogram , the diagonals are
- 21) A parallelogram with diagonals are equal called
- 22) A parallelogram with diagonals are perpendicular called
- 23) A parallelogram with diagonals equal and perpendicular called
- 24) A parallelogram with an angle right called
- 25) A parallelogram with sides are equal in length called
- 26) A rectangle , its sides are equal or its diagonals are perpendicular
called
- 27) A Rhombus , its angles are right or its diagonals are equal called
- 28) The measure of each interior angle of equilateral triangle =

Accumulative Questions in Geometry

- 29) The number of altitudes of right angled triangle =
- 30) The number of medians of isosceles triangle =
- 31) The point of intersection of medians of triangle divides each one in the ratio 2 : from vertex , and 3 : from base
- 32) The sum of length of any two sides in triangle the length of third Side.
- if the length of two sides in triangle 3 cm , 5 cm , then the length of third side $\in$] ,[
 - if the length of two sides in triangle 4 cm , 7 cm , then the length of third can be cm (3 , 8 , 11)
 - a triangle with one axis of symmetry and two side lengths 3 cm and 8 cm , then its perimeter =
- 33) In ΔXYZ if $m(\angle X) = 120^\circ$, then the longest side is
- 34) if ΔABC is a right angled triangle at B , then The longest side is
- 35) In the right angled triangle , the length of side opposite to angle with measure 30° is the hypotenuse. (equal , half , twice)
- 36) In the right angled triangle , the length of the hypotenuse is The median drawn from the right vertex. (equal , half , twice)
If ABC is a right angled triangle at B , $AB = 3\text{cm}$, $BC = 4\text{cm}$, then :
- its perimeter = , its area =
 - the length of median drawn from the right vertex = cm
- 37) If XY is axis of symmetry of AB , then $\overline{XA} \dots \overline{XB}$ (= , $\perp$, // , $\equiv$)
and $XY \dots AB$ (= , $\perp$, // , $\equiv$)

Accumulative Questions in Geometry

- 38) if L_1 , L_2 are two straight lines and $L_1 \cap L_2 = \emptyset$, then $L_1 \dots L_2$ ($\perp$, $//$)
- 39) The image of the point (5,-3) By reflection in the x -axis is
- 40) The image of the point (-2 , 1) By reflection in the y -axis is
- 41) The image of the point (5,-3) By reflection in the origin point is
- 42) The image of the point (1,-4) By translation ($x+2$, y) is
- 43) The area of square its perimeter 20 cm =
- 44) The area of square its diagonal length 6 cm =
- 45) The area of rhombus its side length 4 cm and height 3 cm =
- 46) The area of rhombus its diagonals lengths 6cm , 4cm =
- 47) If the lengths of diagonals of a rhombus 12cm , 16cm , then its side length =
- 48) The area of rectangle its width 6 cm and diagonal length 10 cm =
 , and its perimeter =
- 49) The area of parallelogram whose the lengths of two bases 6 cm , 8 cm
 and its smaller height 5 cm =
- 50) ABCD is a parallelogram its area = 36 cm^2 , $E \in \overline{AD}$, then the area of ΔEBC =

Accumulative Questions in Geometry

- 51) The area of trapezium whose middle base length is 7 cm , its height 4 cm =
- 52) The area of trapezium whose lengths of two parallel bases 5 cm, 9 cm ,and its height 3 cm =
- 53) A circle with diameter 7 cm , then its area = , its perimeter =
- 54) A circle with area $9 \pi \text{ cm}^2$, then its radius =
- 55) A circle with circumference $9 \pi \text{ cm}$, then its radius =



Math For Kids: Hoda Ismail

Accumulative Questions in Geometry

0 $\longleftrightarrow$ 90 $\longleftrightarrow$ 180 $\longleftrightarrow$ 360

1) The types of angles (zero, acute , right , obtuse , straight , reflex)

- The type of the angle of measure 75° is ...**acute**
- The type of the angle of measure 200° is ...**reflex**
- The type of the angle of measure 90° is ...**right**
- The type of the angle of measure 180° is ...**straight**
- The type of the angle of measure 95° is ...**obtuse**
- The type of the angle of measure $89^\circ 62'$ is ...**obtuse**

2) The sum of measures of complementary angles = ... **90°** ...

3) The sum of measures of supplementary angles = ... **180°** ...

4) The sum of measures of accumulative angles at a point = ... **360°** ...

- if the measure of an angle is 65° ,then it complements angle **25°** ,
supplements angle **115°** ,and its reflex angle = **295°**
- if the ratio between two complementary angles is 7 : 11 then the measure of smaller angle = ... **35°** ...

5) If the two adjacent angles are complementary , then the outer sides of them are ...**perpendicular**...

6) If the two adjacent angles are supplementary , then the outer sides of them are ...**on...The same straight line**...

7) Each two vertically opposite angles are ...**equal in measure**...

8) The sum of measures of exterior angles of any polygon = ... **360°** ...

9) The sum of measures of interior angles of triangle = ... **180°** ...

10) The sum of measures of interior angles of a quadrilateral = ... **360°** ...

11) The sum of measures of interior angles of a pentagon = ... **540°** ...

The measure of interior angle of regular pentagon = ... **108°** ...

Accumulative Questions in Geometry

- 12) The sum of measures of interior angles of a hexagon = 720°
The measure of interior angle of regular hexagon = 120°
- 13) The number of diagonals of a quadrilateral 2 , a pentagon 5 ,
a hexagon 9 , a triangle $Zero$
- 14) The number of axes of symmetry of Square has 4 , Equilateral triangle has 3 , Rectangle has 2 , Rhombus has 2 , isosceles triangle has 1 , isosceles trapezium has 1 , trapezium has 0 , Parallelogram has 0 , Scalene triangle has 0 , circle has $infinite$
- 15) If ABCD square, then the axis of symmetry of AC is BD .
- 16) In Square ABCD, $m(\angle BAC) = 45^\circ$.
- 17) ABCD is a parallelogram, if $m(\angle A) = 70^\circ$, then:
 $m(\angle B) = 110^\circ$, $m(\angle C) = 70^\circ$, $m(\angle D) = 110^\circ$
- 18) ABCD is a parallelogram, if $m(\angle A) + m(\angle C) = 200^\circ$, then $m(\angle D) = 80^\circ$
- 19) ABCD is a parallelogram, if $m(\angle A) = 3m(\angle B)$, then $m(\angle C) = 135^\circ$
- 20) in a parallelogram, the diagonals are $bisect$ each other
- 21) A parallelogram with diagonals are equal called $rectangle$
- 22) A parallelogram with diagonals are perpendicular called $rhombus$
- 23) A parallelogram with diagonals equal and perpendicular called $square$
- 24) A parallelogram with an angle right called $rectangle$
- 25) A parallelogram with sides are equal in length called $rhombus$
- 26) A rectangle, its sides are equal or its diagonals are perpendicular called $square$
- 27) A Rhombus, its angles are right or its diagonals are equal called $square$
- 28) The measure of each interior angle of equilateral triangle = 60°

Accumulative Questions in Geometry

- 29) The number of altitudes of right angled triangle = **3**..
- 30) The number of medians of isosceles triangle = **3**..
- 31) The point of intersection of medians of triangle divides each one in the ratio $2 : 1$... from vertex , and $3 : 1$... from base
- 32) The sum of length of any two sides in triangle **greater Than** the length of third Side.
- if the length of two sides in triangle 3 cm , 5 cm , then the length of third side $\in [2 , 8]$
 - if the length of two sides in triangle 4 cm , 7 cm , then the length of third can be cm (3 , **8** , 11)
 - a triangle with one axis of symmetry and two side lengths 3 cm and 8 cm , then its perimeter = **19 cm**
- 33) In ΔXYZ if $m(\angle X) = 120^\circ$, then the longest side is **YZ**..
- 34) if ΔABC is a right angled triangle at B , then The longest side is **AC**...
- 35) In the right angled triangle , the length of side opposite to angle with measure 30° is the hypotenuse. (equal , half , twice)
- 36) In the right angled triangle , the length of the hypotenuse is The median drawn from the right vertex. (equal , half , twice)
- If ABC is a right angled triangle at B , $AB = 3\text{cm}$, $BC = 4\text{cm}$, then :
- its perimeter = **$3+4+5=12$** , its area = **$\frac{1}{2} \times 3 \times 4 = 6\text{cm}^2$**
 - the length of median drawn from the right vertex = **2.5**. cm
- 37) If XY is axis of symmetry of AB , then $\overline{XA} \dots \overline{XB}$ (= , $\perp$, // , $\equiv$) and XY..... AB (= , $\perp$, // , $\equiv$)

Accumulative Questions in Geometry

- 38) if L_1, L_2 are two straight lines and $L_1 \cap L_2 = \emptyset$, then $L_1 \dots L_2$ ($\perp$, $//$)
- 39) The image of the point (5,-3) By reflection in the x -axis is $..(5,3) ..$
- 40) The image of the point (-2 , 1) By reflection in the y -axis is $..(2,1) ..$
- 41) The image of the point (5,-3) By reflection in the origin point is $..(-5,3) ..$
- 42) The image of the point (1,-4) By translation ($x+2, y$) is $..(3,-4) ..$
- 43) The area of square its perimeter 20 cm = $..5 \times 5 = 5 \times 5 = 25 \text{ cm}^2$
 $S = P \div 4 = 20 \div 4 = 5 \text{ cm}$
- 44) The area of square its diagonal length 6 cm = $.. \frac{1}{2} \times d \times d = \frac{1}{2} \times 6 \times 6 = 18 \text{ cm}^2$
- 45) The area of rhombus its side length 4 cm and height 3 cm = $.. S \times h = 4 \times 3 = 12 \text{ cm}^2$
- 46) The area of rhombus its diagonals lengths 6cm , 4cm = $.. \frac{1}{2} \times d_1 \times d_2 = 12 \text{ cm}^2$
 $A = \frac{1}{2} \times d_1 \times d_2$
- 47) If the lengths of diagonals of a rhombus 12cm , 16cm , then its side length = $..10 \text{ cm}$
- 48) The area of rectangle its width 6 cm and diagonal length 10 cm = $.. l \times w = 6 \times 8 = 48 \text{ cm}^2$
 , and its perimeter = $.. 2 \times (l + w) = 2 \times 14 = 28 \text{ cm}$
- 49) The area of parallelogram whose the lengths of two bases 6 cm , 8 cm and its smaller height 5 cm = $.. b \times h = 8 \times 5 = 40 \text{ cm}^2$
- 50) ABCD is a parallelogram its area = 36 cm^2 , $E \in \overline{AD}$, then the area of $\triangle EBC$ =
 $\frac{1}{2} \times 36 = 18 \text{ cm}^2$



Accumulative Questions in Geometry

51) The area of trapezium whose middle base length is 7 cm , its height 4 cm =

$$A = b \times h = 7 \times 4 = 28 \text{ cm}^2$$

52) The area of trapezium whose lengths of two parallel bases 5 cm, 9 cm ,and its height 3 cm = $\frac{1}{2} \times (b_1 + b_2) \times h = \frac{1}{2} \times 14 \times 3 = 21 \text{ cm}^2$

53) A circle with diameter 7 cm , then its area = $\pi \cdot r^2 = \frac{22}{7} \times 3.5 = 38.5 \text{ cm}^2$
 $r = 3.5$

54) A circle with area $9\pi \text{ cm}^2$, then its radius = $\sqrt{9} = 3 \text{ cm}$

55) A circle with circumference $9\pi \text{ cm}$, then its radius = $\frac{9}{2} = 4.5 \text{ cm}$



Math For Kids: Hoda Ismail

حمل الآن

مجاناً وحصرياً

المراجعة رقم (4)

الترم الاول



Model 1

1) Choose the correct answer:

1. $X^2 - y^2 = (x+y) (\dots\dots\dots)$

- (a) $x-y$ (b) $x+y$ (c) xy (d) $y-x$

2. If the quantities a, b and c are in continued proportion, then $b^2 = \dots\dots\dots$

- (a) $a+c$ (b) ac (c) $a-c$ (d) $a \div c$

3. The range of a set of values = the greatest value $\dots\dots\dots$ the smallest value.

- (a) $\div$ (b) $\times$ (c) $-$ (d) $+$

4. The solution set of the equation: $X^2 = -9$ where $x \in \mathbb{R}$ is $\dots\dots\dots$

- (a) $\{3\}$ (b) $\{-3, 3\}$ (c) $\{-3\}$ (d) $\emptyset$

5. If $(4, 6) \in \{4, 8\} \times \{3, k\}$, then $k = \dots\dots\dots$

- (a) 8 (b) 6 (c) 4 (d) 3

6. The function $f: f(x) = 9$ is represented graphically by a straight line passing through point $(7, \dots\dots\dots)$

- (a) -7 (b) zero (c) 7 (d) 9

7. If 3 is added to the two terms of the ratio $5 : 9$, then it becomes $\dots\dots\dots$

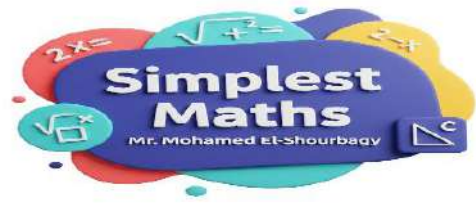
- (a) $3 : 2$ (b) $2 : 3$ (c) $7 : 11$ (d) $3 : 5$

8. If $(3, y+1) = (x, 5)$, then $xy = \dots\dots\dots$

- (a) -15 (b) -2 (c) 12 (d) 15

9. If $f: \mathbb{R} \rightarrow \mathbb{R}$ where $f(x) = 4 - x$, then $f(-4) = \dots\dots\dots$

- (a) -8 (b) zero (c) 4 (d) 8



2) Answer the following:

10 If $y \propto x$ and $y=3$ when $x=6$, find:

1. The relation between y and x
2. The value of y when $x=10$

.....

.....

.....

.....

11 If a, b, c and d are proportional quantities, prove that: $\frac{a+b}{c+d} = \frac{b}{d}$

.....

.....

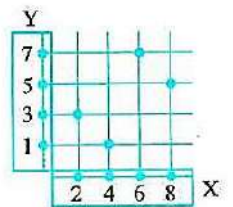
.....

.....

.....

12 The opposite cartesian diagram represents the relation R from X to Y

- (1) Write R as a set of ordered pairs.
 - (2) Is R a function or not?
- If it is a function, write its range.



.....

.....

.....

.....

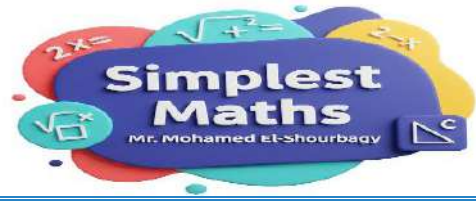
13 If $X+1, X+2, 3$, and 4 are proportional quantities, find the value of X

.....

.....

.....

.....



14 If $\frac{x}{5} = \frac{y}{6}$, find the value of the expression : $\frac{2x+y}{y-x}$

.....

.....

.....

.....

15 Graph the curve of the function
f: $f(x)=x^2-1$, where $x \in [-2, 2]$.

From the graph, find:

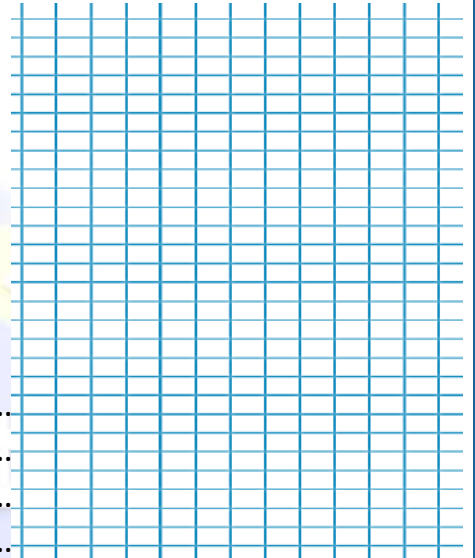
1. *The coordinates of the vertex of the curve.*
2. *The minimum value of the function.*

.....

.....

.....

.....



16 Calculate the mean and the standard deviation for the values: 4, 6, 8, 10, 12

.....

.....

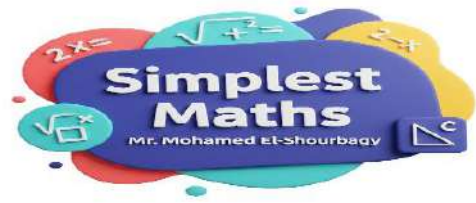
.....

.....

.....

.....

.....

**1) Choose the correct answer:**

1. If $3^{x-5}=1$, then $X=$

- (a) 5 (b) 0 (c) -5 (d) 1

2. If $XY=5$, then $y \propto$

- (a) X (b) $5X$ (c) $\frac{1}{x}$ (d) $X-5$

3. The point $(2, -4)$ lies in the.....quadrant.

- (a) First (b) Second (c) Third (d) Fourth

4. If $n(X)=2$, $n(X \times Y)=6$, then $n(Y)=$

- (a) 8 (b) 4 (c) 3 (d) 1

5. The range of the values: 9, 5, 3, 2 is

- (a) 7 (b) 3 (c) 5 (d) 4

6. If $\sqrt{X}=3$, then $X=$

- (a) 3 (b) 6 (c) 9 (d) 3

7. If $a, 6, 9$ are in continued proportion, then $a=$

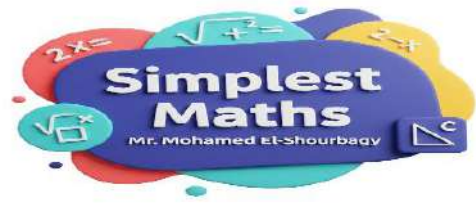
- (a) 2 (b) 3 (c) 4 (d) 5

8. The function $f(X)=X(X+1)$ is from thedegree.

- (a) Zero (b) First (c) Second (d) Third

9. If $X= \{2\}$, then $X^2=$

- (a) $\{4\}$ (b) $\{2,2\}$ (c) $(2,2)$ (d) $\{(2,2)\}$



2) Answer the following:

10 If $y \propto \frac{1}{x}$ and $y = 8$ when $x = 3$, find the value of y when $x = 4$

.....

.....

.....

.....

11 If $\frac{x}{3} = \frac{y}{4}$, find the value of : $\frac{x+y}{2x-y}$

.....

.....

.....

.....

12 If a, b, c, d are proportional quantities, prove that : $\frac{a+b}{c+d} = \frac{b}{d}$

.....

.....

.....

.....

13 If $X = \{1, 2, 3, 4\}$, and R is a relation on X where " aRb " means " $a+b=5$ " for every $a \in X, b \in X$:

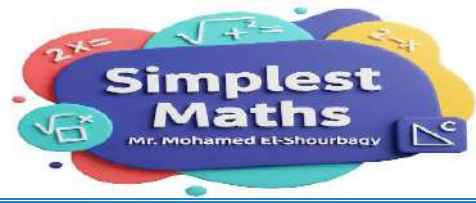
1. Write the relation R .
2. Represent it using an arrow diagram.
3. Is R a function? Why or why not?

.....

.....

.....

.....



14

Find the arithmetic mean and the standard deviation for the values: 2, 5, 8, 11, 14

.....

.....

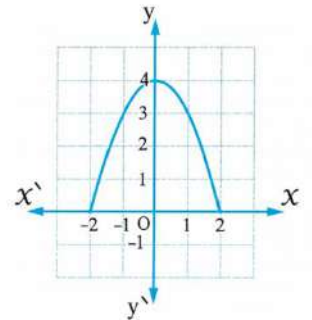
.....

.....

15

The opposite figure represents the curve of the function $f : f(x) = 4 - x^2$ in the interval $[-2, 2]$. From the graph find:

1. The coordinates of the vertex point.
2. The equation of the axis of symmetry.
3. The maximum value of the function.



.....

.....

.....

.....

16

If $\frac{a + 3b}{3} = \frac{2b + c}{2}$, prove that : $a \propto c$

.....

.....

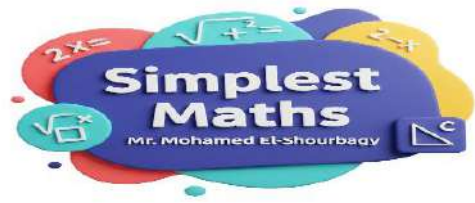
.....

.....

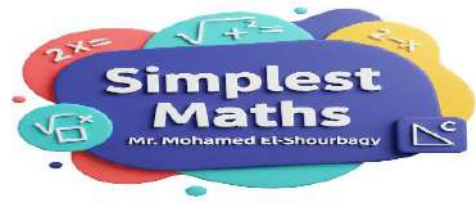
.....

.....

.....

**1) Choose the correct answer:**

- If the point $(2, b) \in$ the set of the function f where $f(X) = 3X - 6$, then $b = \dots\dots\dots$
 (a) zero (b) 7 (c) 9 (d) 2
- If $Y \times X = \{(1, 4)\}$, then $X^2 = \dots\dots\dots$
 (a) $\{(1, 16)\}$ (b) $\{(2, 8)\}$ (c) $\{(1, 1)\}$ (d) $\{(4, 4)\}$
- If the point $(3 - X, X - 1)$ is located in the fourth quadrant, where $X \in \mathbb{Z}$, then $X = \dots\dots\dots$
 (a) 4 (b) 3 (c) 2 (d) zero
- If $\frac{a}{3} = \frac{b}{2} = \frac{c}{4} = \frac{2a-3b+5c}{5x}$, then $X = \dots\dots\dots$
 (a) 4 (b) 5 (c) 3 (d) 2
- The relation representing the inverse variation between the two variables X and y is $\dots\dots\dots$
 (a) $XY = 7$ (b) $y = X + 5$ (c) $y = 5X$ (d) $\frac{x}{3} = \frac{y}{4}$
- The range of the values: 17, 13, 6, 8 and 15 equals $\dots\dots\dots$
 (a) 3 (b) 8 (c) 11 (d) 5
- If $n(X^2) = 4$, $n(X \times Y) = 6$, then $n(Y^2) = \dots\dots\dots$
 (a) 2 (b) 3 (c) 4 (d) 9
- $\{7\} \subset \dots\dots\dots$
 (a) $]5, 7[$ (b) $[5, 7[$ (c) $\{5, 7\}$ (d) $(7, 5)$
- The degree of the algebraic term $3x^3y^n$ is the fifth, then $n = \dots\dots\dots$
 (a) 3 (b) 2 (c) 5 (d) 1



2) Answer the following:

10

Two integer numbers, the ratio between them is 3:7 and if 5 is subtracted from each of them, the ratio between them becomes 1:3.

Find the two numbers.

.....

.....

.....

.....

11

If a varies directly with b , and $a = 20$ when $b = 7$, find:

(1) The relation between a and b

(2) The value of b when $a = 40$

.....

.....

.....

.....

12

Find the mean and standard deviation for the values: 8, 13, 20, 16, 18, 21

.....

.....

.....

.....

13

If $X = \{1, 2, 3, 4\}$, $Y = \{3, 6, 9, 12, 15\}$ and R is a relation from X to Y where " aRb " means " $3a=b$ " for all $a \in X$, $b \in Y$:

(1) Write R and represent it by an arrow diagram.

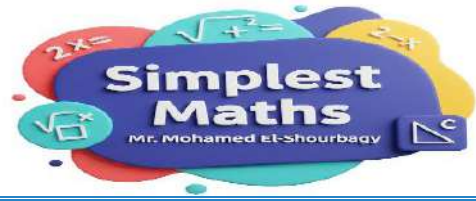
(2) Show if R is a function or not.

.....

.....

.....

.....



14

If a, b, c and d are proportional quantities, prove that: $\frac{a}{b-a} = \frac{c}{d-c}$

.....

.....

.....

.....

.....

.....

15

If a, b and c are in continued proportion, prove that: $\frac{a^2+b^2}{b^2+c^2} = \frac{a}{c}$

.....

.....

.....

.....

.....

.....

.....

16

Represent the function graphically $f : f(x) = (x - 2)^2$, where $x \in [-1, 5]$

- (1) The coordinates of the vertex of the curve.
- (2) The equation of the axis of symmetry.
- (3) The minimum or maximum value of the function.

.....

.....

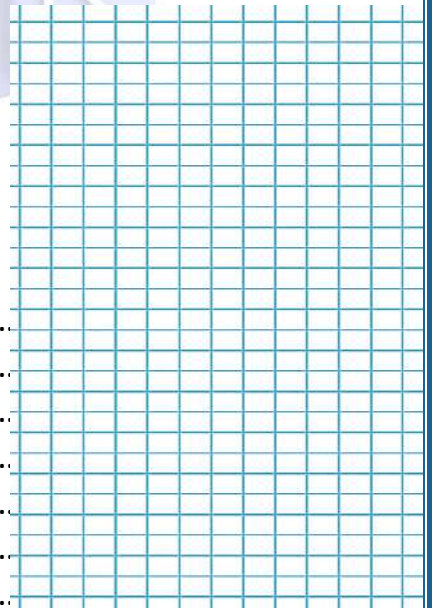
.....

.....

.....

.....

.....



1) Choose the correct answer:

1. The sum of measures of the interior angles of the triangle equals°

- (a) 360 (b) 270 (c) 180 (d) 90

2. $\sin 30^\circ = \dots\dots\dots$

- (a) $\sqrt{2}$ (b) $\frac{1}{2}$ (c) $\frac{\sqrt{3}}{2}$ (d) $\frac{1}{\sqrt{2}}$

3. The slope of the straight line that is parallel to the X-axis equals

- (a) -1 (b) zero (c) 1 (d) 2

4. If $m(\angle A) + m(\angle B) = 90^\circ$, $\sin A = 0.6$, then $\cos B = \dots\dots\dots$

- (a) 0.8 (b) 0.75 (c) 0.6 (d) 1.3

5. The midpoint of AB where A(3, 5), B(1, -5) is

- (a) (4, 0) (b) (8, 0) (c) (2, 5) (d) (2, 0)

6. The numbers that can be the lengths of sides of a right-angled triangle are

- (a) 5, 4, 3 (b) 3, 4, 6 (c) 5, 13, 11 (d) 6, 8, 12

7. If $2X = 5 + \tan 45^\circ$, then $X = \dots\dots\dots$

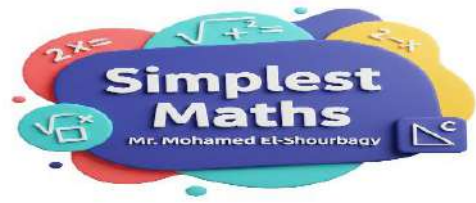
- (a) 3 (b) 4 (c) 5 (d) 6

8. The slope of the straight line that is perpendicular to the straight line whose equation is $y = 7x + 8$ equals

- (a) 8 (b) 7 (c) $-1/7$ (d) -8

9. If ABC is a right-angled triangle at B where AB = 3 cm, BC = 4 cm, then $\tan C = \dots\dots\dots$

- (a) $\frac{4}{3}$ (b) $\frac{4}{5}$ (c) $\frac{3}{5}$ (d) $\frac{3}{4}$



2) Answer the following:

10

Prove that the straight line passing through the two points (5, 7), (4, 5) is parallel to the straight line whose equation is $y - 3 = 2x$

.....

.....

.....

.....

.....

.....

.....

11

Find the equation of the straight line that passes through the point (1, 3) and makes an angle of measure 45° with the positive direction of the X-axis.

.....

.....

.....

.....

.....

.....

12

If the straight line whose equation is $y = 2x + c$ (where c is a constant) passes through the point (2, 5), find the length of the intercepted part of the y-axis.

.....

.....

.....

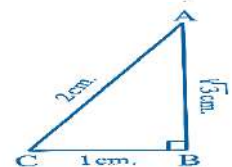
.....

13

ABC is a right-angled triangle at B where $AC = 2$ cm, $BC = 1$ cm, $AB = \sqrt{3}$ cm

(1) Find: $m(\angle A)$

(2) Prove that: $1 + \cos C = 2 \cos^2 A$

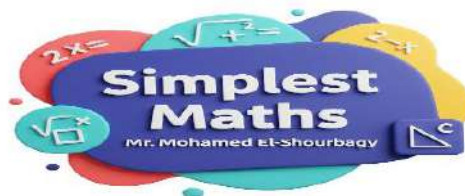


.....

.....

.....

.....



14

ABCD is a square where A (0, 0), B (3, y), if its side length is 5 units. Find the positive value of y.

.....

.....

.....

.....

.....

.....

15

Find the value of:

$$\sin 30^\circ \cos 60^\circ - \tan^2 60^\circ + \cos^2 30^\circ$$

.....

.....

.....

.....

.....

.....

16

Prove that the points A (1, 1), B (4, 2) and C (7, 3) are collinear.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

**1) Choose the correct answer:**

1. The distance between the point $(-4, 3)$ and the y-axis equals length unit.

- (a) -4 (b) 2 (c) 4 (d) 7

2. The volume of the cube whose edge length is 8 cm. equals cm^3 .

- (a) 2 (b) 32 (c) 64 (d) 512

3. The sum of the measures of all interior angles of any quadrilateral is $^\circ$.

- (a) 90 (b) 180 (c) 360 (d) 540

4. If ABC is a right-angled triangle at B, then $\sin A + \cos C = \dots$ [where $m(\angle A) \neq m(\angle C)$]

- (a) $2 \cos A$ (b) $2 \sin C$ (c) $2 \sin A$ (d) $2 \tan A$

5. If $\tan 3X = \sqrt{3}$ where $3X$ is the measure of an acute angle, then $X = \dots^\circ$

- (a) 20 (b) 30 (c) 45 (d) 60

6. ABC is an isosceles triangle and right at B, then $\tan A = \dots$

- (a) 1 (b) $\frac{1}{\sqrt{2}}$ (c) $\frac{\sqrt{3}}{2}$ (d) $\frac{1}{2}$

7. If $A = (-2, 5)$, $B = (-2, -1)$, then the midpoint of AB is

- (a) $(-2, 2)$ (b) $(-3, -2)$ (c) $(0, -2)$ (d) $(2, 3)$

8. Two perpendicular straight lines whose slopes are $\frac{k}{2}$, $\frac{-2}{3}$, then $k = \dots$

- (a) $\frac{-4}{3}$ (b) -3 (c) 3 (d) $\frac{-1}{3}$

9. ABC is a right-angled triangle at B, $AB = 6 \text{ cm}$, $m(\angle C) = 30^\circ$, then the length of BC = cm

- (a) 12 (b) $6\sqrt{3}$ (c) 6 (d) 3



2) Answer the following:

10

Without using the calculator, find the value of X.

If $\tan X^\circ = 4 \sin 60^\circ \sin 30^\circ$ where X is the measure of an acute angle.

.....

.....

.....

.....

.....

.....

11

Prove that the straight line passing through the two points $(-3, -2)$, $(4, 5)$ is parallel to the straight line that makes with the positive direction of the X-axis an angle of measure 45°

.....

.....

.....

.....

.....

.....

12

Prove that the points A $(3, -1)$, B $(-4, 6)$, and C $(2, -2)$ lie on one circle whose center is M $(-1, 2)$, and then find its circumference using $\pi = 3.14$.

.....

.....

.....

.....

13

If C is the midpoint of $\overline{AB}$, A $(-3, y)$, B $(9, 11)$, C $(x, -3)$, find: $x + y$

.....

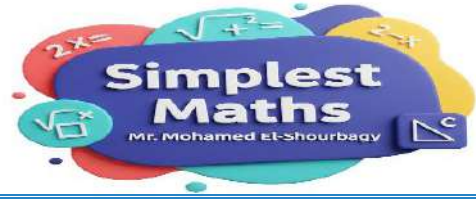
.....

.....

.....

.....

.....



14

Find the equation of the straight line passing through the point $(-2, 4)$ and perpendicular to the straight line whose equation is : $2x-3y+6=0$

.....

.....

.....

.....

.....

.....

15

Prove that the points A $(-2, 5)$, B $(3, 3)$, C $(-4, 2)$ and D $(-9, 4)$ are the vertices of a parallelogram.

.....

.....

.....

.....

.....

.....

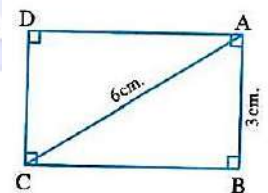
16

In the opposite figure: ABCD is a rectangle in which $AB = 3 \text{ cm}$, $AC = 6 \text{ cm}$

Find:

(1) $m(\angle ACB)$

(2) The area of the rectangle ABCD



.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

**Model 3****1) Choose the correct answer:**

1. $\sqrt{2} \cos 45^\circ \cos 30^\circ = \dots\dots\dots$

- (a) $\sin 60^\circ$ (b) $\tan 30^\circ$ (c) $\sin 30^\circ$ (d) $2 \sin 30^\circ$

2. If ABCD is a square, A(-1, 4), C(1, 6), then its area = square units.

- (a) 8 (b) 16 (c) 4 (d) $\sqrt{2}$

3. ABCD is a quadrilateral where $\sin A = \cos 2A$, $m(\angle B) = 150^\circ$, $m(\angle C) = 50^\circ$, then $m(\angle D) = \dots\dots\dots$

- (a) 120° (b) 100° (c) 130° (d) 150°

4. If the straight line $4y = ax + 3$ makes with the two axes in the first quadrant an isosceles triangle, then $a = \dots\dots\dots$

- (a) $\frac{3}{4}$ (b) $\frac{4}{3}$ (c) 4 (d) -4

5. The straight line which passes through the point (5, 4) and is parallel to the y-axis, its equation is

- (a) $x = 5$ (b) $y = 4$ (c) $x = -5$ (d) $y = -4$

6. The point which lies on the straight line passing through the two points (2, 3), (4, 4) is

- (a) (1, 1) (b) (4, 2) (c) (6, 5) (d) (3, 6)

7. ABC is a right-angled triangle at B, if $3AC = 5BC$, then $\tan A = \dots\dots\dots$

- (a) $\frac{3}{5}$ (b) $\frac{5}{3}$ (c) $\frac{3}{4}$ (d) $\frac{1}{3}$

8. DHO is a right-angled triangle at O; if $\tan D = 1$, then

- (a) $m(\angle D) = m(\angle O)$ (b) $DH = DO$
 (c) $m(\angle H) = m(\angle O)$ (d) $DO = OH$

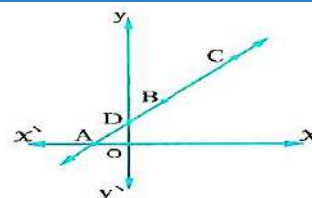
9. The image of the point (-2, 1) by reflection in y-axis lies in the quadrant.

- (a) first (b) second (c) third (d) fourth



2) Answer the following:

- 10** Find the equation of the straight line which passes through the point (9, 6) and is parallel to the straight line whose equation is : $3y+x=5$
-
-
-
-
-
-
- 11** Find the value of H without using a calculator, if $(H + 5)^\circ$ is the measure of an acute angle and $\tan(H+5)^\circ = \sin 30^\circ \cos 60^\circ + \cos^2 30^\circ \tan 45^\circ$
-
-
-
-
-
-
- 12** Find the value of a if the straight line whose equation is $(a-4)x-3y=5$ is parallel to the straight line which passes through the two points (0, 5), (a, 9)
-
-
-
-
- 13** In the opposite figure: B(1, 2), C(3, 4)
Find:
The equation of $\overleftrightarrow{AC}$
The area of triangle OAD
-
-
-
-
-
-
-
-
-
-





14

$\overline{AB}$ is a diameter in a circle whose centre is (5, 7) and B(8, 11), find the equation of the straight line which is perpendicular to $\overline{AB}$ from the point A

.....

.....

.....

.....

.....

.....

15

ABCD is a trapezoid where $\overline{AD} \parallel \overline{BC}$, $m(\angle B) = 90^\circ$, $AB = 3$ cm, $BC = 10$ cm, $AD = 6$ cm
Find the value of:
 $2\cos(\angle DCB) - \tan(\angle ACB)$

.....

.....

.....

.....

.....

.....

16

If the distance between the two points (x, 5), (6, 1) equals $2\sqrt{5}$ length unit
Find the value of x.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



1

First Group :

- ① a ② b ③ c ④ d ⑤ b
⑥ d ⑦ b ⑧ c ⑨ d

Second Group :

⑩ (1) $\because y \propto x \quad \therefore y = mx$
 $\therefore 3 = 6m \quad \therefore m = \frac{1}{2}$
 $\therefore y = \frac{1}{2}x$
 (2) When $x = 10 \quad \therefore y = \frac{1}{2} \times 10 = 5$

⑪ $\because \frac{a}{b} = \frac{c}{d} = m$
 $\therefore a = bm, c = dm$
 $\therefore \text{L.H.S.} = \frac{a+b}{c+d} = \frac{bm+dm}{dm+dm} = \frac{b(m+1)}{d(m+1)}$
 $= \frac{b}{d} = \text{R.H.S.}$

⑫ (1) $R = \{(2, 3), (4, 1), (6, 7), (8, 5)\}$

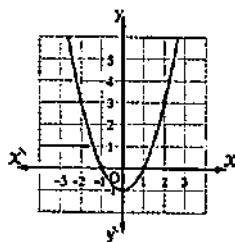
(2) Yes R is a function from X to Y
 , the range = $\{3, 1, 7, 5\}$

⑬ $\because \frac{x+1}{x+2} = \frac{3}{4} \quad \therefore 3x+6=4x+4$
 $\therefore 6-4=4x-3x \quad \therefore x=2$

⑭ $\because \frac{x}{5} = \frac{y}{6}$
 $\therefore x = 5m, y = 6m$
 $\therefore \frac{2x+y}{y-x} = \frac{10m+6m}{6m-5m} = \frac{16m}{m} = 16$

⑮ $f(x) = x^2 - 1$

x	-2	-1	0	1	2
$f(x)$	3	0	-1	0	3



From the graph :

- (1) The vertex of the curve is : $(0, -1)$
 (2) The minimum value = -1

⑯ Form the table by yourself

, then the mean $(\bar{x}) = 8$, $\sigma = 2.83$

2

First Group :

- ① a ② c ③ d ④ c ⑤ a
⑥ c ⑦ c ⑧ c ⑨ d

Second Group :

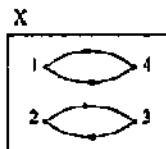
⑩ $\because y \propto \frac{1}{x} \quad \therefore \frac{y_1}{y_2} = \frac{x_2}{x_1}$
 $\therefore \frac{8}{y_2} = \frac{4}{3} \quad \therefore y_2 = \frac{8 \times 3}{4} = 6$

⑪ $\because \frac{x}{3} = \frac{y}{4} = m$
 $\therefore x = 3m, y = 4m$
 $\therefore \frac{x+y}{2x-y} = \frac{3m+4m}{6m-4m} = \frac{7m}{2m} = \frac{7}{2}$

⑫ $\because \frac{a}{b} = \frac{c}{d} = m \quad \therefore a = bm, c = dm$
 $\therefore \text{L.H.S.} = \frac{a+b}{c+d} = \frac{bm+dm}{dm+dm} = \frac{b(m+1)}{d(m+1)}$
 $= \frac{b}{d} = \text{R.H.S.}$

⑬ $R = \{(1, 4), (2, 3), (3, 2), (4, 1)\}$

Yes, R is a function on X
 because every element in X
 has only one image in Y



⑭ Form the table by yourself
 , then the mean $(\bar{x}) = 8$
 $\sigma = 4.24$

- ⑮ (1) The vertex of the curve is : $(0, 4)$
 (2) The equation of the axis of symmetry is : $x = 0$
 (3) The maximum value = 4

⑯ $\because \frac{a+3b}{3} = \frac{2b+c}{2}$
 $\therefore 6b+3c=2a+6b \quad \therefore 3c=2a$
 $\therefore a = \frac{3}{2}c \quad \therefore a \propto c$

3

First Group :

- ① a ② d ③ d ④ a ⑤ a
⑥ c ⑦ d ⑧ c ⑨ b

Second Group :

⑩ Let the two numbers be : a, b

$\therefore \frac{a}{b} = \frac{3}{7} \quad \therefore a = 3m, b = 7m$

$\therefore \frac{3m-5}{7m-5} = \frac{1}{3} \quad \therefore 9m-15=7m-5$

$\therefore 9m-7m=-5+15$

$\therefore 2m=10 \quad \therefore m=5$

$\therefore$ The numbers are 15 and 35

⑪ (1) $\because a \propto b \quad \therefore a = mb$
 $\therefore 20 = 7m \quad \therefore m = \frac{20}{7}$
 $\therefore a = \frac{20}{7}b$

(2) When $a = 40 \quad \therefore 40 = \frac{20}{7}b$
 $\therefore b = 40 \times \frac{7}{20} = 14$

⑫ Form the table by yourself
 , then the mean $(\bar{x}) = 16$, $\sigma = 4.43$

⑬ (1) $R = \{(1, 3), (2, 6), (3, 9), (4, 12)\}$

(2) R is a function from X to Y
 because every element in X
 has only one image in Y

x	1	2	3	4
y	3	6	9	12

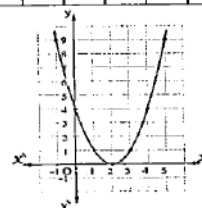
⑭ $\because \frac{a}{b} = \frac{c}{d} = m \quad \therefore a = bm, c = dm$
 $\therefore \frac{a}{b-a} = \frac{bm}{b-bm} = \frac{bm}{b(1-m)} = \frac{m}{1-m} \quad (1)$
 $\therefore \frac{c}{d-c} = \frac{dm}{d-dm} = \frac{dm}{d(1-m)} = \frac{m}{1-m} \quad (2)$

From (1) and (2) : $\therefore \frac{a}{b-a} = \frac{c}{d-c}$

⑮ $\because a, b, c$ are in continued proportion
 $\therefore b^2 = ac$
 $\therefore \text{L.H.S.} = \frac{a^2+b^2}{b^2+c^2} = \frac{a^2+ac}{ac+c^2} = \frac{a(a+c)}{c(a+c)}$
 $= \frac{a}{c} = \text{R.H.S.}$

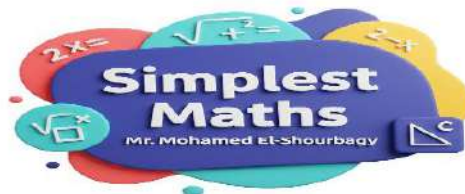
⑯ $f(x) = (x-2)^2 = x^2 - 4x + 4$

x	-1	0	1	2	3	4	5
$f(x)$	9	4	1	0	1	4	9



From the graph :

- (1) The vertex of the curve is : $(2, 0)$
 (2) The equation of the axis of symmetry is : $x = 2$
 (3) The minimum value = 0



1

First Group :

- 1 c 2 b 3 b 4 c 5 d
6 a 7 a 8 c 9 d

Second Group :

$$10 \therefore m_1 = \frac{5-7}{4-3} = \frac{-2}{-1} = 2$$

$$\therefore m_2 = 2$$

$$\therefore m_1 = m_2$$

$\therefore$ The two straight lines are parallel.

$$11 \therefore \text{The slope of the straight line} = \tan 45^\circ = 1$$

$$\therefore \text{The equation : } y = x + c$$

$$\text{at } (1, 3) \quad 3 = 1 + c \quad \therefore c = 2$$

$$\therefore \text{Its equation : } y = x + 2$$

$$12 \therefore \text{The straight line passes through the point } (2, 5)$$

$$\therefore 5 = 2 \times 2 + c \quad \therefore c = 5 - 4 = 1$$

$\therefore$ The straight line intercepts one unit from the positive part of the y-axis.

$$13 (1) \therefore \Delta ABC \text{ is a right-angled at B}$$

$$\therefore \sin A = \frac{1}{2} \quad \therefore m(\angle A) = 30^\circ$$

$$(2) \text{ L.H.S} = 1 + \cos C = 1 + \frac{1}{2} = \frac{3}{2}$$

$$\text{R.H.S} = 2 \cos^2 A = 2 \times \left(\frac{\sqrt{3}}{2}\right)^2$$

$$= 2 \times \frac{3}{4} = \frac{3}{2}$$

$$\therefore \text{L.H.S} = \text{R.H.S}$$

(2)

$$14 \therefore AB \sqrt{(3-0)^2 + (y-0)^2} = \sqrt{9+y^2}$$

$$\therefore AB = 5 \text{ units}$$

$$\therefore 5 = \sqrt{9+y^2} \quad \text{"squaring the two sides"}$$

$$\therefore 25 = 9 + y^2 \quad \therefore y^2 = 25 - 9 = 16$$

$$\therefore y = 4 \text{ or } y = -4 \text{ "refused"}$$

$$15 \sin 30^\circ \cos 60^\circ - \tan^2 60^\circ + \cos^2 30^\circ$$

$$= \frac{1}{2} \times \frac{1}{2} - (\sqrt{3})^2 + \left(\frac{\sqrt{3}}{2}\right)^2$$

$$= \frac{1}{4} - 3 + \frac{3}{4} = -2$$

$$16 \therefore AB = \sqrt{(4-1)^2 + (2-1)^2}$$

$$= \sqrt{9+1} = \sqrt{10} \text{ length unit.}$$

2

First Group :

- 1 c 2 d 3 c 4 c 5 a
6 a 7 a 8 c 9 b

Second Group :

$$10 \therefore \tan X = 4 \times \frac{\sqrt{3}}{2} \times \frac{1}{2} = \sqrt{3}$$

$$\therefore X = 60^\circ$$

$$11 \therefore m_1 = \frac{5+2}{4+3} = 1 \quad m_2 = \tan 45^\circ = 1$$

$$\therefore m_1 = m_2$$

$\therefore$ The two straight lines are parallel.

$$12 \therefore MA = \sqrt{(3+1)^2 + (-1-2)^2} = \sqrt{16+9}$$

$$= \sqrt{25} = 5 \text{ length unit.}$$

$$MB = \sqrt{(-4+1)^2 + (6-2)^2} = \sqrt{9+16}$$

$$= \sqrt{25} = 5 \text{ length unit.}$$

$$MC = \sqrt{(2+1)^2 + (-2-2)^2} = \sqrt{9+16}$$

$$= \sqrt{25} = 5 \text{ length unit.}$$

$$\therefore MA = MB = MC$$

$\therefore A, B$ and C lies on the circle M

Which its radius length is 5 length unit.

$\therefore$ The circumference of the circle

$$= 2\pi r = 2 \times 3.14 \times 5 = 31.4 \text{ length unit.}$$

$$13 \therefore C \text{ is the midpoint of } AB$$

$$\therefore (x, -3) = \left(\frac{-3+9}{2}, \frac{y+11}{2}\right)$$

$$\therefore x = \frac{-3+9}{2} = \frac{6}{2} = 3$$

$$-3 = \frac{y+11}{2} \quad \therefore -6 = y+11$$

$$\therefore y = -17$$

$$\therefore x + y = 3 + (-17) = -14$$

$$14 \therefore \text{The slope of the given straight line} = \frac{2}{3}$$

$$\therefore \text{The slope of the required straight line} = \frac{-3}{2}$$

$\therefore$ The equation of the required straight line is :

$$y = -\frac{3}{2}x + c$$

$\therefore$ The straight line passes through the point $(-2, 4)$

$$\therefore 4 = -\frac{3}{2} \times -2 + c \quad \therefore c = 1$$

$\therefore$ The equation of the required straight line is :

$$y = -\frac{3}{2}x + 1$$

$$15 \therefore \text{The slope of } AB = \frac{3-5}{3+2} = -\frac{2}{5}$$

$$\therefore \text{the slope of } BC = \frac{2-3}{-4-3} = \frac{1}{7}$$

$$\therefore \text{the slope of } CD = \frac{4-2}{-9+4} = -\frac{2}{5}$$

$$\therefore \text{the slope of } AD = \frac{4-5}{-9+2} = \frac{1}{7}$$

$\therefore$ The slope of AB = the slope of CD

$$\therefore AB \parallel CD$$

$\therefore$ the slope of BC = the slope of AD

$$\therefore BC \parallel AD$$

$\therefore ABCD$ is a parallelogram.

$$16 (1) \text{ In } \Delta ABC : \therefore m(\angle B) = 90^\circ$$

$$\therefore \sin(\angle ACB) = \frac{3}{6} = \frac{1}{2}$$

$$\therefore m(\angle ACB) = 30^\circ$$

$$(2) \therefore (BC)^2 = (6)^2 - (3)^2 = 27$$

$$\therefore BC = 3\sqrt{3} \text{ length unit}$$

$\therefore$ The area of the rectangle

$$ABCD = 3 \times 3\sqrt{3} = 9\sqrt{3} \text{ square unit.}$$

3

First Group :

- 1 a 2 c 3 c 4 d 5 a
6 c 7 c 8 d 9 a

Second Group :

$$10 \therefore \text{The slope of the given straight line} = \frac{-1}{3}$$

$$\therefore \text{The slope of the required straight line} = -\frac{1}{3}$$

$\therefore$ The equation of the required straight line is :

$$y = -\frac{1}{3}x + c$$

$\therefore$ The required straight line passes through the point $(9, 6)$

$$\therefore 6 = -\frac{1}{3} \times 9 + c \quad \therefore c = 9$$

$\therefore$ The equation of the required straight line is :

$$y = -\frac{1}{3}x + 9$$

$$11 \therefore \tan(H+5)^\circ = \frac{1}{2} \times \frac{1}{2} + \left(\frac{\sqrt{3}}{2}\right)^2 \times 1$$

$$= \frac{1}{4} + \frac{3}{4} = 1$$

$$\therefore (H+5)^\circ = 45^\circ \quad \therefore H = 40^\circ$$

$$12 \therefore m_1 = \frac{9-5}{4-0} = \frac{4}{4} = 1 \quad m_2 = \frac{-(4-4)}{-3} = \frac{0}{-3} = 0$$

$$\therefore L_1 \parallel L_2 \quad \therefore m_1 = m_2$$

$$\therefore \frac{4}{4} = \frac{0}{-3} \quad \therefore a^2 - 4a = 12$$

$$\therefore a^2 - 4a - 12 = 0$$

$$\therefore (a-6)(a+2) = 0$$

$$\therefore a = 6 \text{ or } a = -2$$

$$13 (1) \therefore \text{The slope of the straight line} = \frac{4-2}{3-1} = 1$$

$\therefore$ The equation of the straight line is

$$y = x + c$$

$\therefore$ The point $B(1, 2) \in$ the straight line

$$\therefore 2 = 1 + c \quad \therefore c = 1$$

$\therefore$ The equation of the straight line AC is :

$$y = x + 1$$

(2) $\therefore$ The point of intersection of the straight line with the x-axis is $A(-1, 0)$ and the point of intersection of the straight line with the y-axis is $D(0, 1)$

$$\therefore \text{The area of } \Delta OAD = \frac{1}{2} \times 1 \times 1$$

$$= \frac{1}{2} \text{ square units.}$$

$$14 \text{ Let } A(x, y)$$

$\therefore AB$ is a diameter in the circle

$$\therefore (5, 7) = \left(\frac{x+8}{2}, \frac{y+11}{2}\right)$$

$$\therefore 5 = \frac{x+8}{2} \quad \therefore 10 = x+8$$

$$\therefore x = 2$$

$$7 = \frac{y+11}{2} \quad \therefore 14 = y+11$$

$$\therefore y = 3 \quad \therefore A(2, 3)$$

$$\therefore \text{The slope of } AB = \frac{11-3}{8-2} = \frac{8}{6} = \frac{4}{3}$$

$\therefore$ The slope of the perpendicular straight line to AB is $-\frac{3}{4}$

$\therefore$ The equation of the required straight line is :

$$y = -\frac{3}{4}x + c$$

$\therefore$ The required straight line passes through the point $(2, 3)$

$$\therefore 3 = -\frac{3}{4} \times 2 + c \quad \therefore c = \frac{9}{2}$$

$\therefore$ The equation of the perpendicular to AB is :

$$y = -\frac{3}{4}x + \frac{9}{2}$$

$$15 \text{ Draw } DF \perp BC$$

$$\therefore AD \parallel BC, AB \perp BC$$

$$\therefore DF \perp BC$$

$\therefore ABCD$ is a rectangle

$$\therefore BF = AD = 6 \text{ cm.}$$

$$\therefore FC = 4 \text{ cm.} \therefore DF = AB = 3 \text{ cm.}$$

$\therefore$ From ΔDFC which is right-angled at F :

$$(DC)^2 = 3^2 + 4^2 = 25$$

$$\therefore DC = 5 \text{ cm.}$$

$$\therefore 2 \cos(\angle DCB) = \tan(\angle ACB)$$

$$= 2 \times \frac{4}{5} - \frac{3}{5} = \frac{8}{5} - \frac{3}{5} = \frac{5}{5} = 1$$

$$16 \therefore 2\sqrt{5} = \sqrt{(x-6)^2 + (5-1)^2} \text{ "squaring the two sides"}$$

$$\therefore 20 = (x-6)^2 + 16 \quad \therefore (x-6)^2 = 4$$

$$\therefore x-6 = \pm\sqrt{4} = \pm 2$$

$$\therefore x-6 = 2 \quad \therefore x = 8$$

$$\text{or } x-6 = -2 \quad \therefore x = 4$$

كيفية طباعة صفحات معينة من ملف معين مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9

